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**SEVERE ERYTHROBLASTOSIS FETALIS TREATED
WITH AN EXCHANGE TRANSFUSION:
A CASE REPORT**

By SISTER EUGENE MARIE CARPE, S.C., B.S., M.T. (ASCP)
Department of Hematology, Good Samaritan Hospital, Cincinnati, Ohio

The exchange or replacement transfusion has not yet gained widespread use in the treatment of erythroblastosis fetalis. The severity of the disease in an infant practically moribund at birth made us decide to use the exchange transfusion as the infant's only chance for survival. This case demonstrates the efficacy of the procedure.

Case number 14773 R.

A bronze-colored male infant was born in Good Samaritan Hospital on November 30, 1946. The infant was the third child in this family. The first two boys were living and well at the ages of three and five. There was no history of jaundice in either of these at birth.

In this case, delivery was normal but the amniotic fluid and vernix were markedly pigmented. There was no spontaneous cry. Brown caseous material was aspirated through a catheter inserted into the trachea. Inhalation oxygen was administered and the infant began to breathe. During the procedure, the interne palpated a large liver and spleen. The hemogram thirty minutes after delivery was: Rbc 3.3; Hb. 12.5 gms; Wbc (corrected) 23,927; Erythroblasts 1392/100 wbc. This blood picture confirmed the clinical diagnosis of severe erythroblastosis fetalis of the *icterus gravis neonatorum* type.

Two hours after delivery, the exchange transfusion was begun. Group A, Rh negative blood obtained from the Blood Bank was used.

The infant's left ankle was incised and the internal saphenous vein exposed. A blunt cannula was inserted and tied in place. A rate of 3cc per minute of ingoing blood was maintained throughout the transfusion.

After the infant had received 75cc blood, the right wrist was incised, the radial artery exposed and pierced with a 20 gauge needle. 0.2cc (2 mgs.) Heparin was injected through the saphenous vein to facilitate the bleeding procedure. It was necessary to repeat the injection of Heparin after 50cc of blood had been withdrawn because the arterial bleeding became sluggish and the blood began to coagulate. When 100cc of blood had been withdrawn, the infant became cyanotic with frequent periods of apnea. Oxygen therapy was renewed and continued during the remainder of the transfusion. A stimulant consisting of one ampule (1cc) Alpha-lobeline-hydrochloride was administered intravenously followed in five minutes by a second ampule. The patient responded and respirations became more regular. The bleeding was terminated after 250cc blood had been removed from the infant's circulation. The infant then received the remainder of the ingoing blood; a total of 425cc.

Three hours after beginning the procedure the infant was sent to the nursery in an improved condition.

Interval specimens of blood removed from the infant's circulation show the fluctuation of the icterus index and the fall in blocking antibody titre, before, during and after the transfusion.

TABLE I—ICTERUS INDEX FLUCTUATIONS AND BLOCKING ANTIBODY TITRES

	Icterus Index	Blocking Antibody Titre
Cord Blood.....	69.0 units	1:96
First blood withdrawn from infant during bleeding procedure.....	110.4	1:96
Last blood removed from infant before terminating bleeding.....	68.2	1:6
One month after delivery.....	31.7	0

An increase of 41.4 units icterus index within the first two hours of life is significant of the rate of hemolysis and the severity of this case. The transfusion reduced the blocking antibody titre 93.75%.

Differential agglutination technique demonstrated that seventy percent of the infant's red cells had been replaced by the donor's infused cells.

Table II lists the course of the disease outlined by the blood pictures.

TABLE II—BLOOD PICTURES IN THIS CASE

Date	Hb. (gms.)	Rbc. (cmm.)	Wbc. (cmm.) (corrected)	Erythroblasts /100 wbc.
11-30-46	12.5	3.33	23,927	1392
Exchange transfusion: Infused blood, 425cc; Blood removed, 250cc				
12- 1	16.0	6.32	25,078	638
12- 2	16.0	5.82	35,316	370
12- 3	14.5	4.8	10,379	269
12- 4	16.5	5.1	11,027	115
12- 5	16.5	5.4	13,060	37
12- 6	16.5	5.0	10,000	2
12- 7	16.5	5.2	1
12-17	9.0	2.76	0
100cc Group A—Rh negative blood intravenously				
12-18	13.0	4.08	10,300	0
12-28	11.5	4.2	0
1-3-47	9.0	3.4	0
1-10	Patient dismissed.			

A roentgenogram (Figure 1) taken five days after birth demonstrates the extent of the hepatomegaly and splenomegaly still present. A similar film (Figure II) taken before dismissal (thirty-four days later) revealed that both liver and spleen had been reduced to normal size.

The infant's course from the time of dismissal has been uneventful. The jaundice gradually disappeared. He has gained weight and has demonstrated no clinical signs of kernicterus.

To complete the studies on the case and to determine the possibilities in future pregnancies, blood groupings and Rh-Hr factor tests were done on the other members of the family. The results of these tests are found in Table III.

The mother's antibody titre in saline was 192; in albumin 384. She gave no history of previous miscarriage, stillbirth or transfusion.

The time element is an important consideration in the use of the replacement transfusion. Logical deduction places the Rh antibody as the "villain" in these cases. Our goal, then, is to

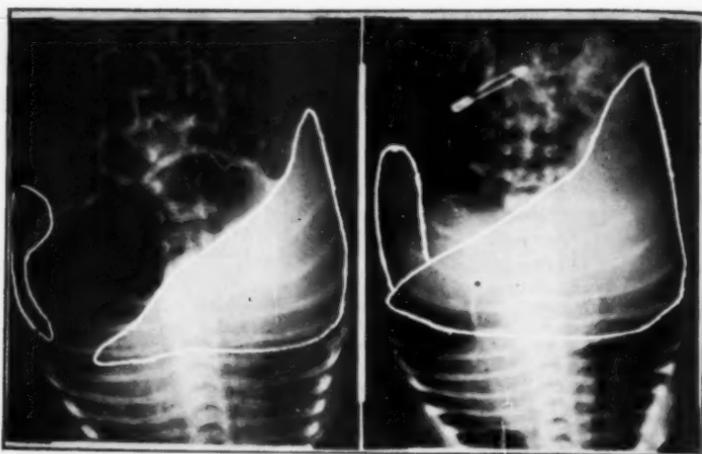


Fig. I

Fig. II

eliminate the "villain" before it has time to strike an effective blow. Therefore it is advisable and necessary, to obtain maximum efficacy, to institute this transfusion procedure as soon as possible after establishing the diagnosis.

There are cases in which intrauterine damage is irreparable. Except in these cases, this new treatment should result in a definite decrease mortality rate in infants with erythroblastosis fetalis.

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A D D E N D U M

Since this article was submitted for publication, eleven additional infants with erythroblastosis fetalis, in varied stages of severity, have been treated by exchange transfusion.

The method of treatment in the first nine, has been the same as described in this case report, except that the amount of blood withdrawn has been 400-450cc and the blood infused 500-550cc. Exchange in these amounts gave us a higher replacement percentage. In the last three cases, exchange was accomplished through the umbilical vein. Stimulation and oxygen was necessary in only one other case.

The patient reported in this article is now one year old, is

TABLE III—BLOOD GROUPINGS AND Rh-Hr FACTOR TESTS

	Blood Group	Rh Type	Hr Type
Father.....	A	Positive (Rh ₁)	Positive
Mother.....	A	Negative	Positive
First Child.....	A	Positive (Rh ₁)	Positive
Second Child.....	A	Negative	Positive
Third Child (present case).....	A	Positive (Rh ₁)	Positive

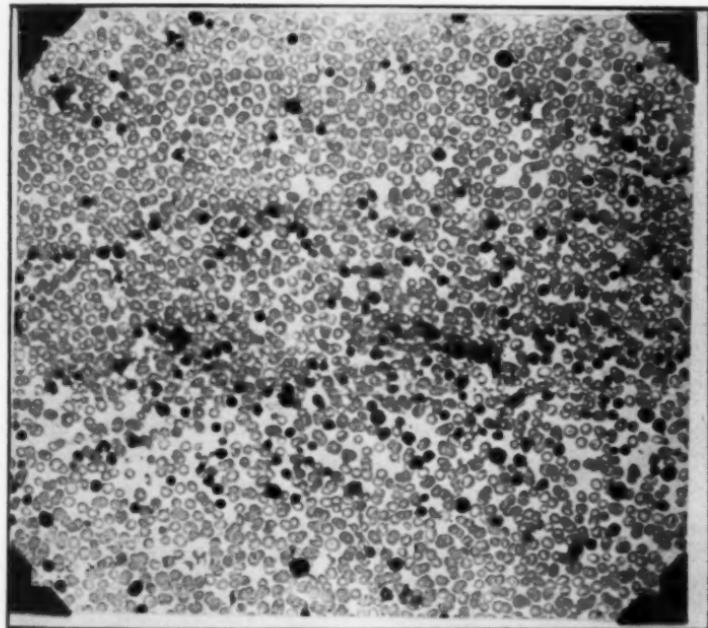


Fig. III

normal and healthy. Ten others are apparently in good condition and gaining weight.

One infant expired one hour after birth. This infant had severe fetal hydrops. Autopsy demonstrated generalized anasarca including cerebral edema, adrenal medullary hemorrhages and aspiration of amniotic fluid. This is an example of irreparable intrauterine damage mentioned above. The replacement transfusion in such cases seems futile.

Since there are no controls in these cases, it is hard to definitely evaluate the results. We do know, however, that before the use of the exchange transfusion, a series of twelve infants with erythroblastosis fetalis demonstrated a mortality rate of fifty per cent. With the exchange transfusion, including our case with intrauterine damage, our mortality rate, in this series is eight and one-third per cent.

PRELIMINARY REPORT ON THE USE OF CARDIOLIPIN ANTIGENS IN THE SERODIAGNOSIS OF SYPHILIS AT SANTA ROSA HOSPITAL*

By PHYLLIS DENISON SHAW, B.S., M.T. (ASCP)

Tests for the serodiagnosis of syphilis have long made use of antigens made from alcoholic extracts of beef heart. However, a lack of knowledge of the properties of the substance responsible for the serological reactions has been a barrier in the development of tests with an optimum of specificity and sensitivity. The production of the regularly used beef heart antigen with a standard reactivity has been most difficult. Each lot of antigen has required painstaking titration and standardization, and many lots of antigen prepared with the utmost of care have been unfit for use from the standpoint of sensitivity or specificity or both.

In 1941 Dr. Mary Pangborn reported¹ on a substance extracted from beef heart which she called "Cardiolipin" and described as a "new phospholipid from beef heart powder." The report stated that the new lipid fraction was markedly anti-complementary without the addition of lecithin. And that cholesterol was necessary for this phospholipid to fix complement. Dr. Pangborn reported that the addition in the proper ratio of these two—lecithin and cholesterol—to the new lipid resulted in an antigen, the serological activity of which was closely comparable to that of antigen in routine use.

The validity of any serological test for syphilis is directly dependent upon the chemical and physical properties of the antigen. The three components of the Cardiolipin-lecithin antigen are chemically identifiable substances and are regularly reproducible. In this respect, the advantage of the new antigen is immediately apparent.

Santa Rosa Hospital has been evaluating the new Cardiolipin-lecithin antigen since September 10, 1946. During this period of evaluation, a total of 2,013 sera have been examined in parallel tests with the Kline Exclusion, Mazzini, and Cardiolipin-lecithin Kline. Of this number, 1,758 sera were negative and 60 doubtful in the Kline Exclusion. The new Cardiolipin-lecithin Kline readings were 1,864 negative and 12 doubtful. The overall report was positive on 138 sera; negative on 1,875. Kline Exclusion readings on 195 sera were positive as against 137 positive in the Cardiolipin-lecithin Kline. There were 2 positives that the Cardi-

* Read April 12, 1947, Texas Society of Medical Technologists Convention, Houston, Texas.

Read July 2, 1947, American Society of Medical Technologists Convention, Denver, Colorado.

olipin-lecithin Kline apparently missed, because of doubtful reactions. One was a treated case in which the Kline Exclusion was negative and the Cardiolipin-lecithin Kline doubtful; the other positive had a Kline Exclusion reading of 4+ and a doubtful Cardiolipin-lecithin Kline. There was only 1 false positive Cardiolipin-lecithin Kline among the 2,013 sera examined. Twenty-nine sera were definitely established as negative that had negative Cardiolipin-lecithin Kline readings, and strongly positive Kline Exclusion readings. Most of these occurred in patients on high protein diets or patients with high blood proteins.

Among the 2,013 sera there were 65 specimens in which the readings differed sufficiently to make a difference between a positive and a negative report. Eighteen of these discrepancies existed in treated positive sera. In all 18 of these cases, the Kline Exclusion was negative or doubtful as against a positive Cardiolipin-lecithin Kline. There were 42 negative sera which gave positive readings in the Kline Exclusion test and negative readings in the Cardiolipin-lecithin Kline. Negative sera in which the Kline Exclusion was negative and the Cardiolipin-lecithin Kline gave readings of + or ++ numbered 5.

Treated cases in this evaluation were especially interesting. Sera from 29 treated cases of syphilis were submitted, and of these, 10 showed variations of readings as given below:

Kline Cardiolipin-lecithin	Kline Exclusion	Mazzini
3.....	+	—
3.....	2	±
3.....	12	2
4.....	3	+
3.....	+	+
4.....	3	+
+	—	—
4.....	3	2
3.....	+	2
4.....	+	2

The above results would indicate that the new Cardiolipin-lecithin Kline is more specific in non-syphilitic cases than the regular Kline Exclusion and much more sensitive in syphilitic cases, particularly in those under treatment. This is in agreement with the findings of Dr. Kline.²

Claims regarding the stability of Cardiolipin-lecithin antigens

and antigen emulsions³ were verified at the Santa Rosa Hospital Laboratory. Emulsions of the Cardiolipin-lecithin Kline antigen stored one week have given identical results with fresh antigen emulsions in 1,003 sera of 1,013 tested. Of this number, 1,008 had readings identical for purposes of reporting. The 5 variations of significance were 3 negative sera which became + in the week-old emulsion; 1 treated case negative in new emulsion that became ++ in the week-old emulsion; and one treated case \pm in the new antigen that became 3 in the week-old emulsion. *Antigen stored two weeks was not suitable for use.*

Cardiolipin-lecithin Kolmer emulsions exhibited the same stability and were found to give at least comparable serological activity for 5-6 days if properly stored. Nine day-old antigen emulsions were found not suitable for use. The original stock bottle of Cardiolipin-lecithin Kolmer antigen was in use from September 10, 1946, to February 5, 1947, with no apparent deterioration.

The most striking advantages of the new Cardiolipin-lecithin antigen were observed with the Kolmer technique. Parallel titrations and tests were run using the regular antigen and the new Cardiolipin-lecithin antigen.

All sera were absorbed with washed packed sheep cells and conditions and technique as prescribed by the author-serologist were strictly observed. Complement was both fresh and lypholized. The physiological saline contained 1% magnesium sulfate. Our own amboceptor and that from two supply houses were used. The results have been consistent.

A single daily preliminary amboceptor titration sufficed for both the Cardiolipin-lecithin and regular antigen hemolysin titrations, and two units as determined were used in parallel Cardiolipin-lecithin and regular antigen complement titrations. It was observed that a higher unit of complement frequently resulted in the Cardiolipin-lecithin-antigen-complement titration than in the regular-antigen-complement titration despite the fact that the same reagents, except for the antigens, were used in both titrations. It was also observed that when the parallel titrations had the same complement readings, supplementary titrations following the 18-hour incubation frequently allowed a greater increased adjustment in the amboceptor dilution for the Cardiolipin-lecithin series than for the series run with regular antigen.

It is felt that the advantage of using the increased dilutions of amboceptor and complement may be reflected in the increased sensitivity of tests with Cardiolipin-lecithin-Kolmer-antigen.

A total of 902 sera have been observed in this evaluation with parallel Cardiolipin-lecithin Kolmer and regular Kolmer anti-

gens. Both antigens gave clear-cut negatives in 416 sera and positives in 467 sera. The number of anti-complementary reactions was 7 in the Cardiolipin-lecithin Kolmer series and 8 in the regular Kolmer series. The sera that gave the anti-complementary reactions with the Cardiolipin-lecithin antigen also gave anticomplementary reactions with the regular antigen. There were possibly 5 false positives. It was not possible in any of the cases to elicit a history compatible with syphilis. Case No. 1 was a patient with tuberculosis of the ovary which gave a negative regular Kolmer antigen reaction and a positive Cardiolipin-lecithin Kolmer antigen reaction. Cases No. II, No. III, and No. IV were patients with diabetes and both series of Kollmers were positive. Case No. V was a pericardial case with no case history available.

A claim for greater specificity of Cardiolipin-lecithin antigen in tests for the serodiagnosis of syphilis in sera from Malaria patients has been made by Rein.³ Our evaluation included 4 sera from Malaria patients, three of which were complicated by syphilis. The one remaining case had no history of syphilis, but had recently suffered a Malaria relapse. The regular Kolmer was positive with a negative Cardiolipin-lecithin Kolmer.

Included in the 902 sera that were tested with the Kolmer technique were 122 treated cases. In 114 of these the Cardiolipin-lecithin antigen Kolmer had a more positive reading than the regular antigen Kolmer. Eight were identical.

In 47 instances revealing discrepancies were noted in the two antigens. In each of the 47 the regular Kolmer antigen reaction was clearly negative with a four plus reaction in at least the first tube of the Cardiolipin-lecithin antigen series, and investigation disclosed that the 47 patients had a history of anti-syphilitic treatment. The youngest patient was a baby with congenital syphilis, and the oldest 78 years. The duration of treatment varied. Of the 47 sera, 3 were included in the Kolmer test primarily because of the Cardiolipin-lecithin Kline reading which has been found to correlate nicely with the Cardiolipin-lecithin Kolmer. The Kahn Standard Diagnostic tests were run on 23 of these sera with 12 negative results and 3 quantity not sufficient.

It is interesting to note at this point, that one of the 47 had presented himself as a blood donor, denying exposure until confronted with the positive Cardiolipin-lecithin Kolmer. He then admitted having had anti-syphilitic treatment.

Occasionally positive sera have been encountered in which the Cardiolipin-lecithin Kolmer antigen gave a higher titer than the regular Kolmer antigen. Frequently, the difference was one of degree of positivity in the corresponding tube, such as for example: Cardiolipin-lecithin antigen 4444 and regular antigen

444±, or Cardiolipin-lecithin antigen 44—and regular antigen 4±—. Occasionally, however, the Cardiolipin-lecithin titer has run as much as two tubes higher in the quantitative Kolmers. We are continuing further studies on the variation of titers of positive sera with the two antigens.

Icteric known positive sera exhibited a striking difference in Kolmer reactions with the Cardiolipin-lecithin and regular antigens. Discrepancies existed in 5 icteric known positive sera. The results of the parallel Kolmers are given below:

Cardiolipin-lecithin Kolmer	Regular Kolmer
44.....	—
43.....	±±
44.....	±±
2—.....	—
+-.....	—

It was evident from the study that the "breaking point" for icteric, low titered positive syphilitic sera is higher in Cardiolipin-lecithin antigen than in the regular antigen. It appears that the increased sensitivity and specificity of Cardiolipin-lecithin antigen accelerates the fixing of complement by the antigen-reagin compound. Apparently a sufficient quantity of complement is fixed to obtain a positive reaction before the deleterious action of the bile can be effected. It was obvious from this study that the use of Cardiolipin-lecithin Kolmer antigen would eliminate many false negative Kolmer reports on icteric, low titered, reagin positive sera. We have established a relationship of Kolmer Cardiolipin-lecithin units and the icterus index at which a negative regular-antigen-Kolmer and positive Cardiolipin-lecithin antigen-Kolmer may be expected. Details of this study will be available elsewhere.

The use of Cardiolipin-lecithin antigen in Kolmer tests on Spinal Fluid has been limited, but the same seems to apply to Spinal Fluid as to serum in regard to the matter of titers. There have been 4 discrepancies in the Kolmer readings with the parallel tests. All 4 have had negative regular Kolmer readings and 3 to 4 Cardiolipin-lecithin Kolmer readings in at least one tube. All 4 had positive clinical symptoms of syphilis.

CONCLUSIONS

Cardiolipin-lecithin Kline antigen is both more sensitive in syphilitic cases and more specific in non-syphilitic cases than the regular Kline Exclusion.

Our findings confirm those of C. R. Rein³ and his co-workers

on the stability of Cardiolipin-lecithin antigen and antigen emulsions.

Cardiolipin-lecithin Kolmer antigen frequently permits the use of higher dilutions of amboceptor and complement, thus reflecting an increased sensitivity and specificity.

The more sensitive Cardiolipin-lecithin Kolmer antigen causes complement fixation in some treated cases that with regular Kolmer antigen give false negative reports.

Only 3 false positives with both antigens indicates at least comparable antigenic activity in Cardiolipin-lecithin antigen.

Sensitivity is increased in highly icteric, low reagin titered sera. There is a "breaking point" in low titered positive icteric sera at which regular Kolmer antigens give false negative reactions. The "breaking point" with Cardiolipin-lecithin antigens is apparently much higher, eliminating many false negatives.

There is a direct relationship between Cardiolipin-lecithin Kolmer units and the icterus index at which false negatives with regular Kolmer antigen can be predicted.

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Cardiolipin for Kolmers by courtesy of Dr. J. F. Mahoney, V. D. Research Labs., Marine Hospital, Staten Island, New York, N. Y.
Cardiolipin for Klines by courtesy of Lederle Labs., Pearl River, N. Y.

MEDICAL TECHNOLOGY AS RELATED TO THE GENERAL PROBLEM OF MEDICAL CARE*

By WARD DARLEY, M. D., F. A. C. P.

As we know it today, medical care is a very complex thing and because of its complexity has many serious problems associated with it. Medical care has always been thus, in the past because of so little knowledge and in the present because of so much. Primitive man lived in a world of magic surrounded by a hostile nature. Magical forces were everywhere; consequently, in order to live he maintained a constant vigilance according to a complicated system of rules and rites in order to protect himself against the evil forces that emanated from his environment. It was his conception that if he became sick his vigilance had broken and a power stronger than his magic was in command. To him an herb did not do good because it acted as a drug but because of the ritual under which it was taken. The primitive medicine man, who was supposed to be supreme in the art of magic, had not only to do with matters that controlled his subjects' health but also had to do with all other things that were of vital concern to the community and the individuals of which it was composed. Thus he was supposed to have power over the sun, the moon and the stars, over drouth, over the abundance of crops, etc. He was a generalist and not a specialist.

As man continued to climb the ladder of progress and began to inject religious concepts into his thinking, we see that while his ideas concerning disease and other natural phenomena underwent change, the priest, who was the dominant influence in society continued, as did the medicine man, to exercise control over all things, both temporal and spiritual. Consequently, the medical care of the times, such as it was, was still in the hands of the generalist.

As man added philosophy to his methods of attempting to understand the universe and his relationship to it, we again note that philosophical leaders attempted to explain health and disease, as well as all of the other phenomena that they observed on the earth and in the skies. In other words, knowledge was still sufficiently scanty so that generalism and not specialism was the rule.

* Read before the Fifteenth Annual Convention of the American Society of Medical Technologists in Denver, Colorado, June, 1947.

With the beginnings of science and its methods of observation, classification and experimentation, it can be noted that its early leaders continued to attempt to apply these methods to all fields and to explain all things. However, continued scientific development has spelled the doom of the generalist, and today it is generally recognized that science and its methods have added so tremendously to our knowledge that fragmentation and specialism in all fields have been imperative. The special fields of music, literature, law, sociology and general science illustrate this point. Further fragmentation and specialism within these fields have rapidly been taking place and can be expected to continue. Now, in the field of science, for example, we see physicists, chemists, botanists, etc., and it is needless to point out that further fragmentation of these rather narrow fields of scientific endeavor is developing.

As far as fragmentation and specialism are concerned, the field of medicine presents an excellent case in point. Medicine can be considered a common meeting ground of all of the arts and sciences. There is hardly a sphere of human endeavor that has not made important contributions to medicine. Progress in the past twenty years has advanced medical knowledge to such an extent that no one individual can possibly take the responsibility for proficiency in all of its phases. Since the turn of the century, specialization in medicine is rapidly replacing generalization. As evidence of this, we can point to the sixteen certifying specialty boards that are now controlling the practice of specialism in the medical profession. Specialization in the field of medical care, however, is reaching far beyond the activities of our doctors. Physicians constitute but about ten per cent of the personnel concerned with medical care. The other ninety per cent is composed of nurses, dietitians, physical therapists, occupational therapists, psychologists, medical record librarians, hospital administrators, medical clerks, special attendants and last but not least, technicians in the fields of x-ray, electroencephalography, electrocardiography, tissue pathology and clinical pathology.

The evolution of medical technology, while relatively a new development, also illustrates the fact that fragmentation and specialization in all fields of medical care are rapidly taking place. A perusal of the first edition of Osler's *Principles and Practice of Medicine*, published in 1892, makes it apparent that the average physician was expected to perform practically all of the rather simple laboratory procedures that were prevalent at that time. Urinalyses, blood counts, gastric analyses, sputum examinations and a few simple bacteriological procedures well covers the list of the common examinations. Developments fol-

lowing the publication of Osler's monumental text in the fields of blood chemistry, immunology, metabolism and the appraisal of organic function rapidly resulted in the appearance of a new specialty—clinical pathology—and the organization in 1922 of the American Society of Clinical Pathologists, the publication in 1925 of Dr. James Campbell Todd's book *Clinical Diagnosis by Laboratory Methods* and the creation in 1935 of a certifying board in pathology. The development of complicated examinations and time-consuming technic soon made it apparent that technical help was a "must" if the clinical pathologist was to be effective in the practice of his specialty. At first he selected and trained for this work individuals who had no uniformity of background. A hodge-podge of schools for the training of medical technologists mushroomed, and it soon became apparent that laboratory help with adequate and standardized training were essential. Consequently, schools of medical technology were standardized and accredited, a registry of medical technologists was established and the American Society of Technologists was organized—all of this since 1928.

In fact, the field of medical technology is now such that within it we are witnessing further fragmentation and specialization. We are seeing the training of individuals who are limiting their activities to serology, to hematology, to bacteriology, to chemistry, to metabolism, etc., and I understand that provision is being made within your registry for the certification of such specialists.

While medical science has progressed and health conditions have improved, it is unfortunate that too wide a gap exists between established medical knowledge and actual medical service. Medical science has infinitely more to give than the people actually receive. The reasons for this involve complex questions of a socio-economic nature, the most important of which have to do with the distribution and supply of medical personnel and facilities. Some discussion of the proper distribution, or rather the lack of proper distribution, and of the present and future supply of technical personnel should be of considerable interest to this organization.

The technologist must obviously have proper supervision and adequate facilities if he or she is to do effective work. Consequently, the maldistribution of medical technologists is a reflection of the maldistribution of physicians and facilities. Physicians will not go to a community where adequate facilities for diagnosis and care are not available. As a rule, adequate facilities for diagnosis and care imply the presence of a well-equipped hospital. Forty per cent of the counties of this country are without such facilities. As we look into the future we hope that the out-

come of the hospital survey and construction program of the Federal Government will go a long way toward remedying this situation. At the present time it is well-recognized that the supply of medical technologists is inadequate to our needs. It is obvious, therefore, that any expansion of hospital and diagnostic facilities must carry with it the training of necessary personnel if said expansion is to result in helping with the solution of our problem of medical care. This expansion implies the training of additional personnel of all types—not just technicians. Consequently, a brief summary of the factors which we must reckon with as we give consideration to the future supply of physicians will also apply to the technology group. Dr. Thomas Parran, the Surgeon General of the United States Public Health Service, has recently given us an excellent summary of this situation. His remarks will be found in the April 12, 1947 issue of the *Journal of the American Medical Association*. The creation of additional facilities for adequate medical care has already been mentioned. To this Doctor Parran adds the factors of a steadily increasing population and of an aging population. In the face of these three factors, the production of medical graduates and also, I fear, of medical technologists is apparently not keeping pace. Other factors listed by Doctor Parran are awareness on the part of the public of the increasing effectiveness of medicine and along with this an increase in the public's buying power. The needs of our large standing army and navy and of our Veterans Administration speak for themselves, as far as medical personnel is concerned. Finally, Doctor Parran mentions the expected growth of our health departments at all levels—national, state and county—and the expected development of new specialties—industrial medicine, physical medicine, etc.—as important factors that will increase the future demand for medically trained personnel.

While the foregoing statements apply to medically trained personnel in general, including medical technologists, there is an additional factor that influences supply which is, in all probability, largely peculiar to the technical and nursing fields. I am speaking of the high casualty rates from matrimony. It is unfortunate that in a high percentage of instances women who receive special and expensive training render a relatively short period of service due to the fact that they marry and acquire family responsibilities.

In conclusion, it seems clear to me that existing and future opportunities in the field of medical technology are such that more individuals should be encouraged to take training. In line with this, it is probable that additional training facilities should be developed.

As far as the general field of medical care is concerned, it must be recognized that we are in a great period of development. As we attempt to cope with this development, we must remember that many unforeseen problems will occur. Our present and future problems, however, should not serve as a reason for our failure to supply a demand which must be met. As far as the field of medical technology is concerned, it seems obvious to me that we must look forward to increasing our training facilities and that in so doing our approach must be both quantitative and qualitative. In other words, we must train enough technicians and at the same time these technicians must be well-trained.

PRACTICAL ASPECTS OF EMOTIONAL ALBUMINURIA

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Presented before the Conference of Medical Technologists, Tri-State Hospital Assembly, Chicago, Ill., on May 5, 1947.

It has frequently been observed that in mass examinations of presumably healthy individuals a certain number of cases will show positive albumin tests in the urine and careful studies on these persons will invariably fail to show any organic cause for such a finding. The percentage of these cases varies anywhere from zero to over 80 (1, 2, 3, 4, 5, 6) and will be highest in the adolescent and young adult.

During the routine examination of aviation cadet applicants I had noticed an unusual number of albumin-positive cases, although this material of vigorous young men should certainly not warrant a considerable number of cases of renal disorder. Inasmuch as persistent albuminuria disqualifies the applicant from aviation cadet training this finding was, of course, a very annoying problem. In investigating this finding I noticed that persons, who had fainted following the withdrawal of a blood specimen for Kahn test, had albumin in a second specimen, obtained subsequently, at a rate of practically 100 per cent. I now examined 1000 cadet applicants by testing one urine specimen at the beginning of the examination and a second about 15 minutes later, after the blood for Kahn test had been withdrawn, and found 23 albumin-positive specimens in the first set and 55 per cent in the second. I thus concluded that this albuminuria was caused by emotional factors and was identical to the type of albuminuria referred to as idiopathic, physiologic, benign, functional, etc. (7). The great variations in the percentage of positive cases I suggested to be caused by the difference of emotional trauma involved and the particular situation under which the specimens were obtained. This trauma may range from the simple emotional stimulus of a mere physical examination or visit in a physician's office to the anticipation of an event which might involve loss of health or life.

Inasmuch as the amounts of albumin encountered may be minimal, even the faintest reactions must be considered and standards must be employed which are more sensitive than those of the usual laboratory procedure. Routinely I have used the simple boiling-acetic acid test in the following manner: About

1 cc of urine is boiled and compared with a control after several drops of 5 per cent acetic acid were added to both test and control specimens. The reading is done by means of a strong illuminating box by holding both tubes against a dark, non-reflecting background. The faintest turbidities are graded one-plus as long as there is no doubt as to their presence. Turbidities sufficiently strong just to obliterate the black of the background are graded four-plus. Two- and three-plus readings are turbidities of corresponding intermediary value. Specimens too small to be examined in regular test tubes are examined in conical centrifuge tubes. In readings of questionable degree the lower reading is taken. In general it is immaterial what test is employed but, once employed it is unwise to change. Obviously, in this manner amounts of albumin are detected which, otherwise, may have been overlooked, and others are recorded which, according to the usual laboratory procedure, may have been disregarded or given a considerably lower reading.

After demonstrating the influence of emotions on the elimination of albumin through the kidneys I have attempted to apply the same considerations on situations which had to be regarded the greatest source of emotional trauma, namely combat. I tested a total of 388 men of four different combat Air Corps squadrons, while on combat duty, by examining several daily urine specimens from every individual over a 20 day period (8). By grading the results in the manner described I obtained a series of figures for every person, every figure representing one test and its degree of positivity. These series had the following appearance:

1. 00000001000100000002010001011100202001000000000000
2. 222032012030302101010110000302101230023100000100
3. 32103102101003211110112100013200200011000010
4. 1122313100010013140300103412004041400000412211023
5. 443120140330041443203002144144412312101423104
6. 020000200000100000000000000010020001100010000000
7. 441440442102400142314412414414434232112410442304420

We notice that every figure series has its own characteristic pattern and that the different patterns vary greatly. While individuals 1 and 6 show only few variations with mostly negative and occasional weakly positive specimens, numbers 5 and 7 show wild fluctuations varying between zero and four-plus and often jumping from one extreme to the other. Individuals 2, 3 and 4 hold about the middle between these two extreme patterns. We can not but assume that the albumin encountered in these healthy young men, who had been thoroughly screened before they were

placed on combat duty, is of the non-organic and most probably the emotional type. The question whether the difference in the various patterns indicates also a difference in the individual's emotional make-up can only be answered by psychological studies, which certainly lie outside the scope of the pathologist. However, I have carried on all further investigations with this thought in mind hoping that I might offer a lead to the psychologist. Assuming that I am correct in my deductions, that greater variations within one figure series indicate greater psychosomatic response to emotional stimuli, it is only one step further to make these series the basis of a numerical classification by simply computing the average number of plusses. Thus we will arrive at a figure which I wish to refer to as "Individual Emotion Score" (IES) and which would be computed according to the formula:

$$\text{IES equals } \frac{\text{Sum of Plusses}}{\text{Number of Tests}} \times 100$$

The Emotion Score of a whole group, examined under equal emotional strain is expressed in corresponding manner as

$$\text{Mean Emotion Score (MES) equals } \frac{\text{Sum of all Plusses}}{\text{Number of all Tests}} \times 100$$

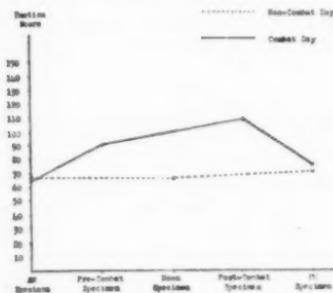
The quotient of both scores, indicating how much more or less an individual responds under emotional strain would represent his "Basic Index." Consequently, a Basic Index of 1 would represent an individual who responds emotionally like the average of his group. If my interpretation of the emotion score is correct a person with a Basic Index of considerably higher than 1 would be emotionally unstable while a Basic Index of much less than 1 would indicate dullness and indifference.

Applying these considerations to the seven examples of figure series, the IES, in the same order of sequence, would be: 28, 94, 91, 134, 209, 24, 245. With an MES of, say 80, the Basic Indices would be: 0.4, 1.2, 1.1, 1.7, 2.6, 0.3, 3.1, respectively.

The Mean Emotion Scores of the four squadrons examined seem generally to be in proportion with the hazards and strains of their missions (Table No. 1). There is also a proper proportion maintained between these hazards and the number of missions and length of overseas service. It was found that there are interesting variations of the Mean Emotion Scores of combat days alone when considered over different times of the day (Graphs Nos. 1 to 4), while the scores for non-combat days, presented similarly, formed an almost straight line for all squadrons. This would indicate that on non-combat days the emotions appear comparatively even while there is a definite and characteristic emotional response to the mission itself. This combat response

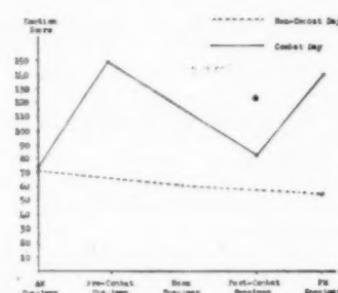
TABLE I
MISCELLANEOUS DATA ON PERSONNEL OF FOUR AIR CORPS COMBAT SQUADRONS

Designation of aircraft	Type of mission	Average months overseas	Average no. of missions	Emotional response	Mean emotion score		Total
					Combat days	Non-combat	
A/A	Short, patrol, escort, occas. dive-bombing	10	100	Slight rise during mission	64.90-110	67.66-70	68
A/B	Longer than A/A escort, bomb-strafe	8.7	87	Anticip. rise, relief drop, second. rise	74-152-81	71-61-53	78
A/C	Long-range, low-level bomb-strafe	5.8	20.7	Anticip. rise, relief, second. fluctuations into next day	107-92	96-99-92	97
A/D	Long-range, high-altitude bombing	5	18.6	Low anticip., high combat response	62-113	69-74-73	74



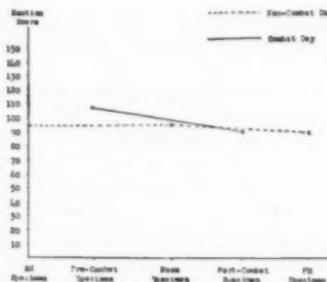
GRAPH 1. Mean emotion scores in pilots of A/A unit at different times of the day on combat and non-combat days.

Note even emotional responses on non-combat days, slight rise during mission.



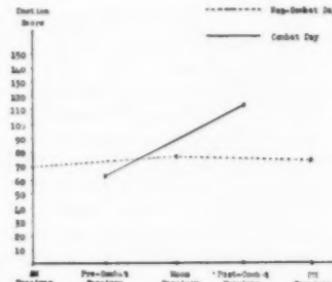
GRAPH 2. Mean emotion scores in pilots of A/B unit at different times of the day on combat and non-combat days.

Note even emotions on non-combat days, anticipation rise, relief drop and secondary rise on combat days.



GRAPH 3. Mean emotion scores in combat personnel of A/C unit at different times of the day on combat and non-combat days.

Note uniformly elevated and even scores for both combat and non-combat days.



GRAPH 4. Mean emotion scores in combat personnel of A/D unit at different times of the day on combat and non-combat days.

Note even emotions on non-combat days, low anticipation and high combat response on combat days.

will also vary according to the strain to which the particular unit is subjected. Basically it may be stated that a marked emotional stimulus will result in a fluctuating series of responses. If the stimulus was strong enough the responses will go over into the next day which, as a rule, is not a combat day for this individual. They therefore overlap with the responses of the non-combat day and lose their characteristic pattern (Graph No. 3).

Interesting observations were made in the break-down of scores of various crew members. Officers showed a lower score than enlisted men, the latter including a number of men who once had been disqualified from aviation cadet training because of emotional instability. The first pilots, who were screened more thoroughly than the other pilots, showed the lowest scores of all; the highest scores were observed among radio operators, of whom, in contrast to the other enlisted crew members, uninterrupted alertness is expected.

Practical Significance of Emotional Albuminuria

For practical purposes the finding of emotional albuminuria is insignificant, unless this phenomenon should be employed as a psychological screening test. If organic disorders have been excluded such urine may be considered negative from a clinical standpoint. A positive albumin test may be considered emotional in nature if the following facts are fulfilled. 1. Negative history and physical examination. 2. At least one negative test during the day. 3. Adequate specific gravity of the urine and consistently negative microscopic examination. 4. Suitable age (adolescence or early adulthood). 5. Normal chemical condition of the blood.

As in mass examinations of young individuals there always will be a good percentage of cases of emotional albuminuria, the examining physician can not be expected to conduct time consuming and costly laboratory tests on all these cases and he will hardly go wrong IF he bases his impression of non-organic albuminuria on less criteria than the ones enumerated. If a young man, during routine examination for employment, insurance, or enlistment, shows albumin in his urine, this finding may be disregarded, provided the history and the usual routine examination are negative and at least one of several urine specimens is free of albumin. The urine should have an adequate specific gravity and it should be normal microscopically. Absence of manifestations of emotional upset or its denial by the examinee do not exclude its existence in a latent state. Emotional albuminuria under such conditions is so common that the burden of proof then lies with the examiner who believes that this albuminuria has organic etiology.

The following simple procedure is suggested for cases of albuminuria which are believed to be emotional in origin: the individual is instructed to save specimens of all voidings for the next 24 hours in separate, thoroughly cleaned containers. He is told to go about his normal daily activities but avoid unusual physical exertion. No dietary precautions are necessary. If the examination of all specimens shows the typical fluctuation of emotional albuminuria with at least one albumin-negative specimen, it is safe to consider this condition as non-organic. In this manner the emotional stimulus represented by the atmosphere of the laboratory is eliminated. The test, of course, is valid only with persons of whom full cooperation can be expected.

It is not intended to consider every case of non-organic albuminuria as emotional in etiology although this seems to be by far the most common type (9). Before the significance of emotional albuminuria was pointed out, most every case of non-organic albuminuria was considered orthostatic in nature, implying that postural factors entered into the picture. Usually the examining physician does not bother to investigate the presence of a lordotic spine, which is believed to be the cause of orthostatic albuminuria, nor the disappearance of albumin from the urine on prone position, and is perfectly convinced of the orthostatic element as long as organic etiology was excluded. If we scrutinize the reports on orthostatic albuminuria in the literature we will find that the great majority of the cases reported could just as well have been emotional in nature, and that cases of true orthostatic albuminuria would boil down to a mere handful. The third group of non-organic albuminuria may be referred to as incidental albuminuria. It includes such cases of non-organic albuminuria which appear following sudden chilling, exertion or even exposure to the sun (10). Because of the particular situation precipitating this type of albuminuria these cases present no diagnostic problem and, in probably all instances, subsequent specimens will be albumin-negative. It must be borne in mind, however, that this type of albuminuria does occur and patients should be questioned accordingly if functional albuminuria is suspected. The laboratory technician, who makes particular effort to record even the slightest traces of albumin, must realize that he will thus encounter a great number of positive tests which might be misleading to the physician. Persons anticipating an operation will spill albumin before and, possibly even more, after the operation. Applicants for admission to the school of nursing, in anticipation of an important and rather exciting moment in their lives, are especially apt to react positively for albumin. It must also be remembered that it makes considerable difference whether, in a group of applicants, the specimens were obtained as the first phase of the admission procedure or some-

time later; the percentage of emotional albuminuria will be much higher in the latter case. Regardless as to the percentage of albumin-positive cases, it is important that the technician realizes that these cases, with all probability, have no clinical significance and are simply a psychosomatic phenomenon which must be expected from every normal person under suitable conditions.

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AN IMPROVED METHOD FOR OBTAINING SPECIMENS BY RECTAL SWAB

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When epidemics or isolated cases of dysentery arise, presumably caused by the Typhoid-Dysentery group of pathogens, the means of obtaining specimens for culture is ever of prime importance. Especially in the case of epidemics, when many cultures are required, this means of obtaining specimens must necessarily be relatively simple, yet accurate.

In the Naval Service we had such conditions arise quite frequently. After preparing the required number of SS Agar* plates, specimens were obtained in the laboratory, examining room or at the bedside of the patient by the following method:

METHOD

A six-inch length of rubber tubing, with an inside diameter of 3/16-inch and a wall thickness of 1/16-inch, was cut with one end beveled to an angle of approximately 30 degrees. An applicator stick, cut to ten or eleven inches in length, was prepared with a cotton swab just large enough to pass through the tube easily. The stick was inserted into the tube so that the swab-end would be just back of the beveled edge. See Figure 1. As many as needed can be prepared, wrapped individually or in lots, and sterilized for 15 minutes at 15 pounds pressure in the steam autoclave.



Fig. I: Swab in position for insertion.



Fig. II: Swab in position for obtaining specimen.

* Obtainable from Difco Laboratories, Inc., Detroit 1, Michigan.

For obtaining specimens by this method, the patient should preferably be in the knee-chest position. Sterile petroleum jelly is applied to the outer surface of the rubber tubing and to the anus. After ascertaining that the swab is back of the beveled edge of the tube, gently insert pointed end to a depth of two or three inches. In this position, by holding the rubber tubing in place with one hand, gently force swab out of beveled edge so that it comes in contact with the mucosa. See Figure II. By turning the swab in the same direction in which it was placed on the applicator stick, it will not become dislodged from applicator. After making three or four turns of the applicator and still holding tube in place, force swab to come back to its original position in the tube. Withdraw tube and swab. Again cause swab to be forced out through beveled edge of tube and heavily inoculate media with swab containing material obtained. After completion of inoculation, the swab is disposed of, the tubing washed and cleaned and prepared with another swab for sterilization.

This method was found to be very simple, economical and highly successful for the isolation of the Typhoid-Dysentery group of organisms. SS Agar is recommended for use in this method because of its inhibitory effect on *E. Coli* which is very necessary when heavy inoculations are made.

EDITORIAL

RECRUITING FOR MEDICAL TECHNOLOGY

If a commodity is in great demand, is it preferable that the market be "flooded" with an inferior product, or should a high quality be maintained which is better able to fulfill its purpose? This question may be considered carefully whether the commodity be a piece of equipment or service. Medical technology is a young profession. Until the immediate past few years the field has been rather limited. Now the demand for qualified medical technologists is growing—growing rapidly. With an ever-increasing intricacy of techniques, there is a greater need for the person with a more advanced educational background. We must meet the demand. How?

This is a challenge to every member of the American Society of Medical Technologists, all qualified members of our profession. We must see that there is a well-trained medical technologist for every laboratory position—for every doctor who wants laboratory reports upon which he can rely. There are many doctors who are just beginning to recognize that certification by the Board of Registry of Medical Technologists of the A.S.C.P. means that the laboratory person he is employing is well qualified to do reliable work. Others may be as well trained or as experienced, but they lack the credentials. Let us do our part to have the letters, M.T. (A.S.C.P.) mean top quality in laboratory service.

Right now is the opportune moment for us to begin an intensive campaign for future medical technologists. We may begin with high school students. Let these young people know what medical technology is. Point out to them that the right way to a career in medical technology is to plan for some years of college training. Help them to realize that the longer range planning will be the shortest way to becoming a successful medical technologist.

On several occasions recently, I have been told by student nurses that they had wanted to enter the profession of medical technology, but that while they were in high school, they did not have access to any information on the subject so they chose the work that seemed to them to be the nearest to it. Why didn't we have that information in the departments of the vocational guidance in those high schools? We must correct this. The Registry has recently published for distribution a splendid booklet on the "Profession of Medical Technology". Let us see that some of these are available to every vocational advisor

in every high school in our community. This is OUR RESPONSIBILITY.

Do not let our responsibility stop there. Remain in touch with these advisors and let them know that we are available for personal conferences with any boy or girl wishing to make medical technology his or her career. There will be opportunities for those of us who are so inclined to speak before high school groups. Rare, indeed, is the school authority who will not gladly accept the offer of a professional man or woman to assist in this type of work.

Do not lose any opportunity to inform prospective medical technologists that this is a field which offers much to the person entering it. Make clear to them that the way to become a qualified medical technologist is not an easy one, that minimum requirements are just those, and are not to be considered sufficient unless it is not expedient to get further education at the time. Stress the fact that the best approved training schools require more than the minimum for entrance, and that under any circumstances, a well-rounded college curriculum best fits him for a successful career in medical technology. It is true that many of the early registrants who are numbered among the best in the profession did not have that college training, but they have had to attain their success the "hard way" through individual study and experience. There are very few of the youngsters planning to become the medical technologists of the future who will be willing to make some fourteen years of experience qualify them to compete with those who are ready to engage in their profession as qualified members after four years of college and one in an approved training school. It would be well to point out to the "would-be" technologist that the present trend of laboratory procedures will require much more theoretical knowledge and background than previously, knowledge which can be more logically and rapidly acquired in a college classroom than as a *diener* in a laboratory, and with only high school courses as a basis.

Indeed it is up to us to find those medical technologists of the future and to instill in them the ideal of becoming members of a profession recognized for its quality of service.—R.M.

TRY THIS METHOD OF RECRUITING MEDICAL TECHNOLOGISTS IN YOUR CITY

In one city of some 500,000 population, the Education and Vocations Committee of the Business and Professional Women's Club is conducting a series of "Career Clinics" for high school girls. These are conducted with the full co-operation of the Vocational Guidance division of the local high schools. At each of the monthly meetings throughout the school year from three to six related professions are considered. The speakers, drawn from those practicing their respective professions in the city, give briefly a resumé of the type of work in which they are engaged, the type of person who is likely to fit into that kind of work, the education necessary beyond high school, "job" opportunities, and compensation. After the short talks on each subject, there is a half hour of discussion and questions.

As a follow-up to the clinic on Fields in Medicine (which included medical technology, nursing, physio-therapy, etc.), the local society of medical technologists invited the group interested in that profession, together with other girls and boys listed by the vocational advisors of the high schools, and students of technology from the two local colleges, to be their guests at a party. At this gathering which was planned to be a very informal affair, there were a number of talks by technologists representing different types of work, the person in the medical laboratory of an industrial plant, someone representing the specialist in a large hospital laboratory, from a doctor's office, clinic, a small hospital (where the incumbent is subject to 24-hour call), a Public Health laboratory, etc. There was also a brief talk by a student from one of the approved schools. Altogether the meeting was a most successful one, and a similar plan will be followed each year, at least until medical technology takes its place among the better known professions.

AMONG THE NEW BOOKS

CONCISE ANATOMY By Linden F. Edwards, Ph. D., Professor of Anatomy The Ohio State University, Columbus, Ohio. 548 pages. 324 illustrations. The Blakiston Company, Philadelphia and Toronto. 1947.

This text is the outgrowth of the long teaching experience of the author. Only the most salient features have been included in gross anatomy. Descriptive, microscopic and developmental aspects were added as a measure to give students a better working knowledge of the human body.

In the introduction to the book, an entire survey of anatomy is given under the following heads: definition of anatomy and its subdivisions; definitions of planes, surfaces and directions; terminology; parts of the human body; physical and constitutional types; animal and human characters of the human species; maladjustments of the human body to erect posture; human sexual dimorphism; and maladjustments to the human sexual dimorphism.

The text proper is divided into six parts. Part one is devoted to general anatomy. Part two is limited to the superior extremity, part three to the inferior extremity. Part four is directed to the anatomy of the head and is followed by part five which considers, in turn, the anatomy of the neck and trunk. Part six is splanchnology. The respiratory system, the digestive system, the endocrine system, and the vessels and nerves of the thoracic and abdominal viscera are considered in this section.

As a reference this volume should be of considerable value to a medical technology library if no other anatomy text is at hand. It is not a large nor detailed text. As a text for colleges it should meet all the requirements of a general course. The book is well illustrated and exceptionally well written for a text of its kind.

THE CHALLENGE OF POLIO By Roland H. Berg. 208 pages. New York. The Dial Press, 1946. Price \$2.50.

In this book the author has ably written the biography of the disease—poliomyelitis. Properly, the book has been dedicated to Franklin D. Roosevelt, whose triumph over polio is depicted. The crusade against infantile paralysis is outlined. Simply, but directly the story of the disease has been narrated—chronologically, pitfalls and achievements of scientists have been recorded. The promise of the future is portrayed in this timely and interesting book.

Although written for the layman, this book contains the accepted knowledge concerning polio. No technology is given but a person who reads this contribution will gain a wider knowledge of so vast a subject.

THE ACUTE INFECTIOUS FEVERS: An introduction for students and practitioners. By Alexander Joe, D. S. C., M. D. (Ed.), F.R.C.P. (Ed.)

D. P. H., D. T. M. & H. Medical Superintendent, City Hospital, Edinburgh. Lecturer on Infectious Diseases to the University of Edinburgh. Formerly Medical Superintendent, North-Western Hospital, London. 266 pages, 64 illustrations. Philadelphia. The Blakiston Company, 1947.

Typically English throughout, there is a wealth of information concerning scarlet fever, erysipelas, puerperal sepsis, diphtheria, whooping-cough, cerebro-spinal fever, enteric fever, measles, chicken-pox, vaccination, mumps, rubella, erythema infectiosum, and serum reactions in this volume. The value of the book lies in the classic descriptions of these diseases. As parallel reading for courses of bacteriology, it will be found most interesting. Certainly this book should find its way into hospital libraries and even technical libraries, for the classic manner in which the author presents each disease stamps indelibly upon the mind the distinguishing features of each disease in question.

The pathology, etiology, transmission, infectivity, clinical features, diagnosis, prognosis, complications, prophylaxis, laboratory diagnosis, varieties of the disease, and chemotherapy are discussed in relation to each specific disease.

Although written for internes and medical officers, the material is so well presented that pre-medical students, students of bacteriology, medical technologists and nurses will find the reading intensely interesting. The fluent style and exquisite diction keep the subject matter alive.

ELEMENTARY MEDICAL PHYSICS: By Howard O. Stearns, Associate Professor of Physics, Simmons College. 354 pages. New York, The Macmillan Company, 1947.

This profusely illustrated book shows how intricately physics is interwoven in medical practice. It is hoped that schools and colleges teaching pre-medical work will adopt this text for teaching students who anticipate either medical or technical training because the fundamental principles which are the basis of the various medical instruments are so well explained and illustrated.

The author begins with explanations concerning the mathematics of physics in his introductory chapter. Then follows the six major sections of the subject as follows:

Part one takes up mechanics under these headings: units and measurements; force and vectors; force and matter; work, power, friction and efficiency; simple machines; liquids; molecular physics and gases. Part two is limited to heat under these captions: thermometry and expansion; heat measurement and heat engines—(the principles of basal metabolism are given in this chapter); heat transfer; and the change of state. Part three treats of wave motion and sound and is subdivided thus: vibratory motion and sound waves; sound; and the ear—(audiometers

and hearing aids are discussed in this chapter). Part four explains electricity and magnetism in considerable detail: electrostatics; electric currents; chemical and magnetic effects of an electric current; energy, heat, and cost of electricity; induced currents; and electromedical apparatus are included in this section. Part five delves into x-rays and atomic phenomena. Part six on light covers a variety of subjects and many practical applications are made. The propagation, illumination, sources; reflection of light; refraction; lenses; optical instruments, spectra and color, (colorimeters, visual and photelometric, are described); the eye and its refractive errors and corrections are outlined; interference and diffraction and polarization conclude this section.

An appendix of formulae and equivalents and four place logarithm tables are included. A bibliography is also listed.

This little volume is an attractive book, for the illustrations clarify many of the more complicated principles which would be hard to follow by description alone. The reviewer wishes to recommend this volume to those who wish to review elementary physics and also to colleges who offer pre-medical curricula. This text is a little too elementary for university work.

A TEXTBOOK OF BACTERIOLOGY: By Thurman B. Rice, A. M., M. D., Professor of Bacteriology and Public Health, The Indiana University School of Medicine. Fourth edition, 603 pages, 127 figures. W. B. Saunders Company, Philadelphia and London, 1947.

This text is written by a physician for physicians, dentists, and pharmacists. It is not an advanced text but the minutia of detail gives it a distinct place as a text of medical bacteriology. Throughout the book one is impressed that the need for the medical technologist is not felt. The reviewer raises this question: what person does most of the medical bacteriology in hospitals and clinics? Is it the physician, the especially trained bacteriologist with an advanced degree, or a medical technologist?

Seldom does one find a text of medical bacteriology so down to earth in its practical aspects. If a professor teaching medical students feels the need for such a text for the future physician, surely such a text will be a welcomed addition by the teachers of medical technologists. There are numerous points throughout the text which are of specific interest primarily to physicians, but the wealth of technical detail supplied throughout the text makes it one of inestimable value to students of medical technology. The illustrations are excellent and detailed.

The contents of the book are as follows: the history of bacteriology is briefly surveyed—at the end of this chapter the future of bacteriology and its problems are outlined; the bacteriology of everyday life, and the place of bacteriology in medical progress are discussed next. These topics are followed

by chapters dealing with the morphology, staining, and culturing of bacteria; the detection of the biological activities of bacteria, the physical and chemical destruction of bacteria; practical disinfection; how micro-organisms cause disease, how the body resists disease, the pyogenic cocci, the staphylococci, the streptococci and the miscellaneous streptococci; the pneumococcus; the gonococcus; the meningococcus; the colon-typhoid dysentery groups of organisms; the brucella; the Friedlander group; the sour-milk group of organisms; the hemophilic group; the diphtheria bacillus; the tubercle bacillus; the leprosy bacillus; the spore-bearing aerobes; the spore-bearing anaerobes; the hemorrhagic septicemia group; the glanders bacillus; the cholera vibrio; the spiral organisms; the rickettsia group; the filterable viruses; the neurotropic viruses; the dermatotropic filterable viruses; bacteriophage and microbial dissociation; the higher bacteria; pathogenic yeasts and molds; the pathogenic protozoa; introduction to discussion of immunity; bacterial virulence; antigens and antibodies; toxin and antitoxin; agglutinins and precipitins—general discussion and practical applications; electrophoretic charge as related to immunologic reactions; opsonins, phagocytosis, and local immunity; complement and amboceptor; the Wassermann reaction; hypersensitivity; the principles of specific immunization and treatment; the bacterial flora of the normal body; and chemotherapeutic and antibiotic agents. Seven appendices follow.

The style is simple and direct; moreover, the inclusion of historical notes of interest and illustrations of methods used by Koch and Pasteur as well as footnotes giving Bergey's classification of organisms make this book unique. Even pronunciations are given.

Each organism and its respective group are presented according to the following outline: the Historical, Morphology, Cultural characteristics, Distribution, Lesions produced; resistance; manner in which disease is produced; the laboratory procedures; specific biological products; prophylaxis; and chemotherapy, complications and sequelae are considered.

The appendices are especially noteworthy. The first one deals with special bacteriology and outlines the methods necessary for recovering organisms from urine and wounds. Decubitus ulcers, focal infections, Pyrogenic substances in distilled water, multiple etiology of disease, and bacterial warfare are also briefly discussed in this section. The second appendix outlines the collection of samples, namely: sputum, throat swabs, direct smears, exudates and transudates, spinal fluid, blood cultures, tissues from biopsy, material from autopsy, pus, feces, urine, water, milk, and gives miscellaneous instructions. The third appendix gives the rules for bacteriological nomenclature, the names of

the most important pathogens, and the general classification of the common types of micro-organisms. The fourth appendix describes the regulatory devices pertaining to the control of biological products for human use, new and non-official remedies of the American Medical Association, and Postal regulations for the transportation of bacteriological and pathological specimens through the mail. The last appendix gives a list of journals important to bacteriologists.

The author has presented his material in a realistic manner which holds the interest of a reader throughout the entire text. The challenge of bacteriology is felt as one reads further and further into the book. His last chapter on the evaluation of antibiotics leaves one looking ahead—into the future.

This book can be recommended as a satisfactory text to schools of medical technology; however, it should be used in conjunction with a detailed laboratory manual since a few of the most common procedures are not given in enough detail as to complete a full course in bacteriology.

AN OPEN LETTER TO THE MEMBERSHIP OF THE A.S.M.T.

Dear Fellow Members of ASMT:

Another year has dawned bright and promising and half of our fiscal year is gone. At this season it is well to take stock of what we have accomplished and to plan for what lies ahead. Since I can't talk with all of you, I shall again have to take this means of letting you know the progress we have made during the first six months of my term of office. These have passed swiftly and pleasantly, and all of you have been most co-operative. It seemed that we got off to a slow start with all the time it took to get all the committees appointed under the new constitution.

First, all of our standing committees are hard at work. Mr. Soucy and his committee on Constitution and By-Laws have written a model constitution for the use of state societies that, in my opinion, is "perfect." Unless you were "behind the scenes" in this, you could not realize the work and planning that went into it. True, they had our ASMT Constitution and By-Laws to go by, but they also had to plan for all the contingencies that might arise in states in different parts of our country. They did this to excellent effect. They have also advised with the state groups that are going ahead with organization and re-organization work.

Miss Laughlin and her Finance Committee have been hard at work revising the budget for this year. When the House of Delegates passed the proposed budget for the year, it was based on 2000 members at \$4.00 per annum dues. When we voted to raise the dues to \$5.00 annually, a change was necessary, and with the constant increase in membership, it was considered practical to base the budget on 3000 members (we already have well over that figure). The Board of Directors voted to increase the JOURNAL allowance from \$1.00 to \$1.50 per capita, to allow for an additional 8 pages for the JOURNAL. Our standing committees will have more money with which to carry on their work. Allowance is being made for an exhibit to publicize ASMT. The Executive Office needed an increased allowance for carrying on its additional work due to the sharp increase in membership. I could explain each item but elsewhere in this issue you will find a copy of this budget as set up by the committee and passed by the Board of Directors. You will also find a report of the receipts and disbursements of the 1947 convention. I know that these matters are of interest to each of you.

Miss Jorgenson and the Membership Committee deserve special praise as they began their work immediately after the con-

vention. In spite of not knowing their financial status, they have been actively and quietly contacting state groups, sending them materials, and advising and directing individual interested members in non-affiliated states. We are happy to report that Utah, Maryland, Kansas, and West Virginia are already applying for affiliation, and that organization is proceeding in New Jersey, North Carolina, Delaware, North and South Dakota, Mississippi, Missouri and Rhode Island. If your state does not already have a society, and is not listed here, why don't YOU contact the Membership Committee member acting as your regional counselor? She can assist you in contacting others in your state who are interested in organizing a society (remember it takes a minimum of only three persons to "start the ball rolling" in a state). Elsewhere in this issue, we are repeating the list of the Membership Committee with their states, for your convenience. The increase in our general membership also reflects the work of this committee. I just want to urge all the states once more to help this committee by starting membership campaigns. State Presidents please note: send the names of your Membership Chairmen to the Executive Office as soon as possible.

Miss Hill and her committee on Standards and Studies are preparing a questionnaire as suggested by the Department of Labor which should be of inestimable value both to our society and to that body. It will give us some information on medical laboratory workers that has long been needed. This committee is doing an excellent job, but in order to get the best results from such a survey, the co-operation of each of you, especially the chairmen of the Standards and Studies Committees in each state.

The Committee on Nominations and Elections, headed by Miss Henrietta Lyle, has also been working diligently and you will see the results in a later issue of the JOURNAL. They also need your co-operation. You know the members in your state who are the most capable of serving ASMT as officers. Please help the committee with your suggestions.

I want especially to call your attention to the report of the Research Committee elsewhere in this issue. Mr. Cross has done a splendid job of organizing his committee. We are now a member of the National Society of Medical Research and this year for the first time will be listed in the National Directory of Scientific and Technical Societies of the United States and Canada. These are both steps forward for our organization.

There is nothing I shall say here about the Committee on Education (the report in the regular section speaks for itself), except that too much praise cannot be given for the work Miss Lehman has done in preparing the loan sets which have been of such value to various groups.

Mrs. Lucille Wallace, at the dinner meeting of the Harris County (Texas) S. M. T., discusses the question of the professional standing of the medical technologist with Dr. A. H. Braden (left), Advisory Editor of the A.J.M.T. and Dr. Harbert Davenport.



Now for a report on my visits with medical technologists in six states during the month of November. (I must count Minnesota.) I left Bemidji for St. Paul and Minneapolis on November 6, visiting there with the General Chairman for the 1948 National Convention, Miss Frieda Claussen. She has done wonderful work in organizing her committees, the members of which (from all over Minnesota) are hard at work, and plans are shaping up beautifully. I don't want to tell tales out of school, but anyone who misses the convention on June 7, 8, and 9, 1948, will really miss something. The convention rooms at the Hotel St. Paul are so conveniently arranged, and the management was so courteous and helpful, that I know we are going to have a grand meeting. I'll let the committees tell you more about the plans.

Leaving St. Paul at noon on the 10th (in the first blizzard of the season—and with snow falling swiftly—no blizzards in June), I arrived in Houston, Texas, 24 hours later to find the sun shining brightly (and it was warm). Our JOURNAL Editor and the Texas Society's lovely president met me at the train and had a good laugh at my fur-lined gloves. Well, I had a grand visit there with the Harris County Medical Technologists and of course, a swell meeting, for Texas always does things in a nice manner. At their annual dinner I told them about our present professional standing with the U. S. Civil Service Commission, the Department of Labor, Veterans' Administration, etc. (included some reports of meetings I had with representatives of those bodies while in Washington, D. C., this past year).

From Houston I went to Lafayette to visit the Executive Office. This was a privilege I shall long remember. I wish it were possible for every ASMT member to visit our Executive Office for it was a revelation. I want to take this opportunity to compliment Miss Tate and her secretary, Mrs. Willets, for their management of our national office. None of us can realize, unless we have been there, just how much work and detail are entailed in handling our affairs. Records, lists, cards, files, all were in

perfect order. All information I wanted seemed to be at their fingertips. The ASMT membership can feel proud that we have such efficient handling of our Executive Office. We were fortunate that Miss Tate could get such good office space for our use. We shall be needing more filing cabinets and space as our membership continues to grow. Several new pieces of equipment have been bought for the office, the most recent being an electric Addressograph machine.

After a most pleasant day and a half in Lafayette, Mrs. Willets and her husband took me to Bunkie, Louisiana, where I took the train for Little Rock. I was most happy to be able to attend the annual meeting of the Arkansas Society there on November 15. They had a grand convention with lots of enthusiasm and plans for the coming year. An intensive membership campaign for ASMT (other states please take notice) is number 1 on their calendar. It was here, too (I just must tell you about it) that I received my FIRST orchid corsage and you know that is a big thrill to any woman, so I have many pleasant memories of my trip to Little Rock.

My next stop was Oklahoma where I made three talks; first on Monday night to the Tulsa Round Table Society of M.T.s and others from the eastern half of the state, the next evening in Oklahoma City to their big local group, and back again to Tulsa on Wednesday to the student group at the University of Tulsa. I was particularly flattered to be asked to talk to this third group, for Dean Chase of the University heard the talk on Monday night and asked me to repeat it to the Mu Tau Phi (sorority for medical technology students). I had a wonderful time in Oklahoma for several reasons. It was "being home again," and knowing that the groups were really interested in ASMT because so many came to the meetings and there was so much enthusiasm. They have had to listen to me so much in the past ten years harping on the same theme, "strong local, state, and national organizations of medical laboratory workers" that I was afraid I had often tired them, but this time I felt that I could bring them a message from all the other states I have been privileged to visit (while I lived Washington, D. C.), and let them know we are all working toward the same end and are MAKING PROGRESS.

My last stop was in Wichita, and I am really proud of what Kansas has done in such a short time. I want particularly to compliment Sister Florina of the Wichita Hospital and Sister Lucina of the St. Francis Hospital, for it was largely due to their efforts that the meeting was such a success. It was a rather cold and rainy Sunday afternoon, but nearly fifty enthusiastic Medical Technologists representing ten Kansas cities were present. Several of them had driven many miles to come to this organiza-

tional meeting. Officers were elected, a next meeting time and place were selected, and their Constitution Committee is already working toward affiliation. After the meeting delicious refreshments were served in the hospital (St. Francis) dining room and good fellowship prevailed. It was an occasion long to be remembered.

I returned to Bemidji with such a feeling of Thanksgiving that so much has been accomplished this fiscal year, and now we have a shiny untarnished New Year before us in which to work and grow. Best wishes to each and every one of you and to ASMT for a Happy, Successful and Prosperous New Year.

Sincerely,
Your President,
LUCILLE WALLACE.



NEWS AND ANNOUNCEMENTS

The American Society of Medical Technologists has been invited to send delegates to a conference in Washington, D. C., on February 17, 18, and 19, 1948, to be held by the Department of Labor, Women's Bureau. This is the second time we have been invited to be represented at such a conference.

Mr. George Kneeland, MT (ASCP), No. 188, announces the formation of a new organization within the A.S.M.T. This is to be known as the Alpha Mu Tau (First Medical Technologists). The objective shall be the professional advancement of Medical Technology. Further information may be obtained by writing to Mr. George Kneeland, University of Chicago Clinics, 950 E. 59th St., Chicago 37, Illinois.

CONVENTION PLANS

The Program Committee wishes to report the following progress on plans for the 16th Annual Convention of the American Society of Medical Technologists, St. Paul, Minnesota, at the Hotel St. Paul:

	Sunday, June 6, 1948
1:30-3:00 P.M.	A. S. M. T. Advisory Council Meeting
3:30-5:30	Tour of the Twin Cities
7:00-9:00	Reception and Registration
	Monday, June 7, 1948
8:30 A.M.	Registration for late comers
9:00	Official opening of the scientific program with the traditional tributes, invocation, addresses by church and civil officials, and by a pathologist, and the president of the A.S.M.E.
10:00	Beginning of the panels and papers, with interruptions for luncheon and time for visiting exhibits. Scientific sessions will conclude at 4:30 P.M. and will be followed by entertainment.
	Tuesday, June 8, 1948
9:00-11:30 A.M.	Meeting of House of Delegates. This will be followed by luncheon
1:30-4:30 P.M.	Panel and papers running concurrently
	Wednesday, June 9, 1948
7:30 A.M.	Leave for the Mayo Clinic at Rochester, Minnesota
10:00	Arrive Rochester
10:15-11:45	Group I tours Mayo Clinic; Group II in Plummer Hall Assembly
12:00-1:00 P.M.	Luncheon through compliments of the Board of Governors, Mayo Clinic
1:15-2:45	Group II tours Mayo Clinic; Group I in Plummer Hall Assembly
3:00-3:30	Country Club Tea
3:30	Leave for St. Paul
7:00 P.M.	Convention Banquet.

Thursday and Friday, June 10 and 11, are reserved for the symposium in Hematology at the Center for Continuation Study at the University of Minnesota, Minneapolis. All attending the convention are invited to enroll. The above program will be filled in as to details, subjects of papers, panels, etc. There will be ample time allowed for visiting the exhibits. Directors and Supervisors of schools approved for training medical technologists are requested to announce to their students that they are welcome to attend the convention, particularly the scientific program and exhibits.

All contributors to the scientific program will please keep in mind that

1. The program goes to press April 15, 1948.
2. Those competing for A.S.M.T. awards must
 - a. Be active members of the American Society of Medical Technologists.

- b. Submit four (4) copies of their manuscript by April 1, 1948.
3. All other authors must submit two (2) copies of their manuscript.
4. All authors are requested to submit three (3) written questions (at the time manuscripts are submitted) on matter covered in the manuscript or such related material as the author feels deserves discussion.
5. In order that speakers on the panel discussing TRAINING AND PROBLEMS OF MEDICAL TECHNOLOGISTS may have the trend of thought throughout the nation concerning these subjects, those individuals interested are requested to submit their questions and opinions at this time to Miss Mollie Hill, 2325—37th Street, N. W., Washington, 7, D. C.

Program Committee: Sr. M. Alcuin, OSB, Chairman College of St. Scholastica, Duluth 2, Minnesota; Mollie Hill, Washington, D. C.; Mrs. Jean Lawrence, 1991 Manhattan Ave., Palo Alto, California; Esther Wilbrecht, 301 N. Jefferson, New Ulm, Minnesota; Mrs. Martha Strolberg, Box 162, Howard Lake, Minnesota.

STANDING COMMITTEE REPORTS

MEMBERSHIP: Elsewhere in this issue are listed the states which are in the process of organization or who are already applying for affiliation with the A.S.M.T. This is in itself ample evidence of the work of this committee.

CONSTITUTION AND BY-LAWS: This committee wishes to direct the attention of the membership to the deadline for submitting proposals for amendments to the Constitution or By-Laws. According to the Articles, before presenting any such proposed changes to the House of Delegates, the same must first be presented to the Constitution and By-Laws Committee, from which it must be published in the JOURNAL at least 60 days before the annual meeting. In order to meet these requirements, the Committee must set the deadline for receiving such proposals at February 1, 1948. **Tempus fugit!** Please submit your proposals NOW.

In order to protect its standing in its respective state, a society of Medical Technologists MUST INCORPORATE. Those state societies already holding a charter, but which are not incorporated, are urged to take steps toward incorporating as soon as possible. The Committee invites inquiries and will render assistance in preparing the necessary papers. Please submit a copy of your State Constitution and By-Laws when requesting information.

Secretaries of State Societies, Please NOTE: Submit copies of the Constitution and By-Laws to the Committee as soon as possible if you have not already done so.

We have been informed that several unorganized states have requested copies of our model constitution. This is gratifying, indeed. Our wish is that of many: that we have 48 affiliated state societies before the close of the fiscal year, and our hopes are set high for a few affiliated foreign countries and territorial societies.

NOMINATIONS AND ELECTIONS: The two additional members of this committee are: Elizabeth Kauderer, Municipal Hospital, Camden, New Jersey. (1 year appointment); Helen Irene Janes, 130 N.E. 41st St., Portland 15, Oregon. (1 year appointment).

STANDARDS AND STUDIES: This committee again wishes to request your wholehearted co-operation and attention when the questionnaires now in the process of being prepared are distributed. Ignoring such questionnaires or answering the same carelessly may cause such erroneous interpretations of the real view of those interested that irreparable damage may be done your profession.

RESEARCH COMMITTEE: Mr. Forrest W. Cross, Chairman of this committee requests that technologists send in questions on procedures and techniques with which they have encountered difficulty. A second matter to which Mr. Cross wishes to call our attention is in regard to our (that of the ASMT) membership in the National Society for Medical Research. He states that, "In substance the purpose of this organization is to promote public understanding of the research basis of and for medical progress. The major obstacle to unobstructed medical research has been the antivivisection cult. The real danger of the movement lies in the support it obtains from perfectly sane individuals who believe antivivisection propaganda simply because they have no other knowledge. For this reason the National Society for Medical Research's program for the elimination of antivivisection restrictions is not one of controversy but simply a program of spreading information of the role of experimental animals in biological research and teaching."

SERVICE FUND AND FINANCE COMMITTEE: This committee has prepared and presented the following budget for the consideration of the Board of Directors. This is based upon a membership of 3000 at \$5.00 per annum dues.

Stamp Fund	\$ 600.00
Printing	800.00
Office Equipment	500.00
Travel Expenses of Officers, Executive Sec'y and Editor of A.J.M.T.	1400.00
Monthly Expenses of Officers total (annual)	180.00
Committee Fund	1400.00
Finance \$ 25.00	Nominations ... \$ 25.00
Membership 700.00	Legislation 100.00
Constitution 75.00	Research 75.00
Standards and Studies 300.00	Education 100.00
JOURNAL Allowance (\$1.50/capita).....	4500.00
Auditing	150.00
Bonds (Treasurer and Executive Secretary).....	50.00
Printing of Constitution & By-Laws.....	200.00
Printing of Third Edition of Information Pamphlet.....	200.00
Insurance on Office Equipment	20.00
Detroit Attorney	25.00
Awards	200.00
Expenses of ASMT Representatives to Bd. of Reg. Meeting.....	200.00
Roster (Supplement and Changes of Address).....	200.00
Reprints	100.00
Exhibit	100.00
Executive Office	
Miss Tate, Executive Secretary.....	\$50.00
Mrs. Willett, Sec'y.....	175.00
Rent	35.00
Petty Cash	45.00
Total Monthly	\$305.00
Incidentals	515.00
TOTAL	\$15,000.00

CONVENTION EXPENSE—1947

Below is a report on Convention Expense, for 1947, Denver, Colorado:	
McCook Republican—Printing Contract Forms for Exhibitors.....	\$17.94
Colorado Society of Medical Technologists—Convention Expenses	60.72
Chairman of Program Committee ASMT.....	6.64
The Letter Shop—for Publicity Letters.....	36.98
Tribune Printing—envelopes for above.....	19.75
Tribune Printing—5000 Convention Notices (inserts).....	20.00
Shirley-Savoy Hotel, Denver—Meeting Rooms.....	255.18
Board Meeting Room.....	22.24
Colorado Badge & Novelty—ribbons for badges.....	35.70
Lewis De Groat—Public Address System.....	69.00
Lewis De Groat—Lantern Slides.....	13.50
Paradise Flag & Decorating Co.—Exhibit Booths.....	311.50
Insurance on Exhibits.....	32.50
Chairman of Exhibit Committee ASMT Expense.....	25.00
Chairman of Exhibits—Local.....	58.35
Reverend Mr. Ingle (Invocation).....	10.00
Stenotype Reporters (Recording Minutes of Meeting).....	54.75
Printing of Registration Cards, Ballots, and Tickets.....	27.30
TOTAL.....	\$1077.05

CONVENTION INCOME

Registration Fees	\$327.00
Exhibits	800.00
	\$1127.00

Approximate Expenses of American Journal of Medical Technology
Each Issue (Based upon average of past 12 months)

Printing and Motor Freight.....	\$980.00
Envelopes for Mailing (3500 copies/issue).....	42.00
Postage (\$73.80) & Mailing Help (\$6.20).....	80.00
Expense Allowance to Editorial Staff.....	20.00
Copyright Fee	2.00
Stamps (for use of Editorial Staff).....	3.00

TOTAL.....	\$1127.00
Six issues per year @ \$1127.00.....	\$6762.00

Estimated Journal Income

Allowance from ASMT (3000 members @ \$1.50).....	\$4500.00
Advertising	2660.00
Subscriptions	393.00
TOTAL.....	\$7553.00

LEGISLATION COMMITTEE: This committee reports that each member is working on material for a model state licensure law. This is to be presented at our next meeting. As each state has its own laws regarding "States Rights," a uniform law would not be possible, but there should be some consideration of as much uniformity as possible. Although we are opposed to state licensing upon principle, we may be forced into taking action. The committee members are well distributed geographically and are ready to serve. Information is needed. Please co-operate in the following ways:

1. State Presidents are requested to see that someone (usually the chairman of the state committee on legislation) is delegated to send the following information to a member of the ASMT Committee: A. Is your society a member of a clipping agency? B. If so, will you send copies of the clippings as soon as possible? C. Will this chairman send to us any news of legislation affecting medical technologists in her state as she re-

ceives it? D. Any pertinent news will be sent from the committee to the state representative concerned.

2. State Presidents are requested to send in name and address of the appointee designated as above to the Chairman of the Legislation Committee. A copy should be sent to the Executive Office in Lafayette.

We want to know when a demand for State Licensure is being made, and if bills are being prepared, by whom, when, and where.

EDUCATION COMMITTEE: This committee wishes to remind you of the value of writing papers for presentation before conventions and other meetings of medical technologists. Enter the paper-writing contest being held in your state society. Ask your state secretary for details. Your letter requesting information may be just the impelling force necessary to instigate such a contest in your state society.

Norman F. Conant, Ph.D., School of Medicine, Duke University, Durham, North Carolina, announces a short course in Medical Mycology to be presented at the University during the month of July, 1948. Write to Dr. Conant direct if you are interested. This committee is most anxious to be of service to the membership by notifying you of post graduate courses for medical technologists. Your co-operation in notifying them of such courses in your vicinity will be appreciated.

This committee also wishes to stress the importance of ASMT members giving sound advice to those young people desiring to enter the field of medical technology. Hold career "clinics" for high school students. Emphasize the importance of college training and the value of the four year course in preparation to be a person with a well-rounded background which is essential for the best medical technologist. Too much value cannot be placed upon the necessity of having a background of sound theoretical knowledge which can be obtained only in several years of college work for a firm foundation in medical technology. The worker with his hands only is at a great disadvantage when a trained mind is in competition with him. Co-operate with your local colleges in preparing curricula for training in medical technology. Acquaint the physicians in your community with the fact that a registered medical technologist has the credentials stating he is qualified. This is the point at which a local group can do more good than an outsider. Insist that only qualified workers be employed. The physician will appreciate your assistance.

Aubrey Grimo, ASMT member from China, has sent an excellent specimen to the committee for loan set material. This consists of a portion of a liver infested with *Clonorchis siensis*. Some of the adult flukes were also sent. Miss Elizabeth Roop, formerly located in Puerto Rico, has also sent some materials for parasitology. This type of co-operation in supplying materials for loan sets is greatly appreciated.

A second grant of \$500.00 for Seminars was made by the Board of Registry at its recent meeting. Although this is an appreciably smaller sum than was allowed last year, it can be put to good use. In order to obtain a portion of the fund, it will be necessary to fill in the forms issued by the Education Committee. This is the first requirement made by the Board of Registry so that they may consider your request. The first form will list the tentative program and will give the approximate attendance expected. The second form will be filled in after the Seminar and will give definite figures. Three copies of the program must also be submitted at this time. No funds will be available after APRIL 30, 1948. Obtain your information from Miss Rachel Lehman, 3939 North Capitol, Indianapolis, Indiana. The completed forms must be mailed back to Miss Lehman. Those groups who have received funds previously are requested to keep their requests at a minimum in order to allow larger grants for those new groups which are being formed. This is a splendid opportunity for the newer societies to obtain funds to assist in their first scientific sessions.

REPORT OF BOARD OF REGISTRY MEETINGS

Chicago, October 25 and 26, 1947

Present were the Board of Registry and two members of the American Society of Medical Technologists, Mrs. Lucille Wallace and Miss Mary Eichman.

This report is a summary of the more important deliberations and decisions of the Board of Registry at its recent meetings. It is being published in the *AMERICAN JOURNAL OF MEDICAL TECHNOLOGY* in the hope that it will be of interest to the members of the American Society of Medical Technologists.

QUESTIONNAIRE

At the request of the Executive Committee of the American Society of Clinical Pathologists, a questionnaire was sent to all members of the American Society of Clinical Pathologists and to an equal number of registered medical technologists chosen at random. The questionnaire was designed to obtain accurate information on the opinions of both pathologists and medical technologists on a number of contentious subjects which have been under discussion for several years, and on which no consensus had ever been reached. Several of the questions pertained to the matter of setting standards for certification of new categories of medical technologists. The replies to the questionnaire were analyzed by a qualified statistician and these analyses were presented to the Board of Registry, the Executive Committee of the American Society of Clinical Pathologists, and to the membership of the American Society of Clinical Pathologists at its annual business session. A more complete discussion of the questionnaire will be published in a forthcoming issue of the *Technical Bulletin*.

Briefly, analysis of the questionnaire showed that: 1) the majority of the whole group favored establishment of a so-called "junior grade" of medical laboratory worker, as well as special certification for certain laboratory specialties; 2) a great majority of the whole group considered the present standards for certification satisfactory; 3) the large majority was opposed to licensing of medical laboratory workers by the states; 4) the majority of the whole group favored the present method of having the renewal form signed by the physician who supervises the work of the medical technologist.

When the analysis of the questionnaire was presented to the American Society of Clinical Pathologists, the members voted that the following new classifications of certification be established:

1. "Junior" certification (name not yet given to this group) of medical technologists, the qualifications to be graduation from an approved high school; one year of technical train-

ing under the supervision of a recognized pathologist; one year of experience in an acceptable laboratory.

2. Special certification in bacteriology for persons with a Bachelor of Science degree in bacteriology and one year of experience in this field in an acceptable laboratory.
3. Special certification in chemistry for persons with a Bachelor of Science degree in chemistry and one year of experience in this field in an acceptable laboratory.
4. Special certification in tissue technique for persons having a high school education and one year of training and experience in this field.

It was agreed that special examinations would be given for certification in each classification. When plans for these programs have been completed and the programs are ready for activation, it will be announced in the *Technical Bulletin*.

Undoubtedly there will be opposition to these changes brought about by the action of the American Society of Clinical Pathologists, but it is well for those who do not approve to keep in mind that the questionnaire was submitted to a large group, and that an unquestionable majority desired establishment of these new classes of certification. The Board of Registry urges the members of the American Society of Medical Technologists to reserve judgment of this move, and consider with understanding the many problems that gave rise to the need for such action.

EDUCATIONAL PROGRAM

The Chairman of the Board reported that grants from the Educational Fund of the Board of Registry had been made available to the American Society of Medical Technologists for aid in seminars and other types of post-graduate education. Such grants had been made to 14 state societies and these seminars had been attended by approximately 2200 registrants from 25 states. The grants were cleared through the Education Committee of the American Society of Medical Technologists. The Board of Registry was much impressed with the importance of this program and allotted further funds to be used for the same purpose for the remainder of this fiscal year.

The Board discussed its plans to encourage the establishment of post-graduate centers in various sections of the country, possibly at certain of the Approved Schools of Medical Technology.

Mrs. Lucille Wallace reported on conferences she had attended with members of the Civil Service Commission in Washington, D. C., and the Board commended her for what she was able to accomplish. The Chairman appointed Mrs. Wallace and Doctor Frank Queen to serve as a committee to further the interests of registered medical technologists in national and state civil service bodies.

CODE OF ETHICS

At the Board of Registry meeting in June, 1946, Doctor Frank Queen and Miss Hermine Tate were appointed to study the Code of Ethics and prepare a revision. This committee corresponded with 14 medical registries, societies, and associations having objectives similar to those of the Registry of Medical Technologists and the American Society of Medical Technologists. A revised Code of Ethics was drawn up and presented to the Board of Registry, which approved its adoption. This revision was a carefully considered attempt to define more explicitly the various elements of the code, but it is obvious that such a code, however worded and however carefully defined, must always leave something to the discretion of the interpreter.

The revision was subsequently submitted to the Executive Committee of the American Society of Clinical Pathologists, which accepted it after certain changes had been made in order to make the code legally sound and consistent with the existing codes of medical ethics.

The Code of Ethics as finally adopted follows:

Section I. On entering at this time into the practice of Medical Technology I accept, with full realization of its implications, the responsibility associated with my duties. I am aware that since the physician relies upon my work in the diagnosis and treatment of disease, even a trivial error may affect seriously the health or even the life of a patient. Every procedure, therefore, must be carried out with thoughtfulness and accuracy. Knowing these things I recognize that my integrity and that of my profession must be pledged to the absolute reliability of my work.

I am aware of the need for cooperation and friendly understanding between my fellow workers and myself and for the patience, humanity and tact which must be exercised toward the patient who by reason of his illness is particularly needful of my skill and kindness.

I realize that the knowledge obtained concerning individuals in the course of my work must be treated as confidential and that since the physician has the ultimate responsibility in diagnosis and treatment, my results must be made known only to him or those designated by him.

To these principles I hereby subscribe, promising to conduct myself at all times in a manner appropriate to the dignity of my profession.

(Signed) M. T. (ASCP)

CONSISTENCY WITH OTHER CODES

Section II. Nothing in this Code of Ethics shall be inconsistent with that of the American Society of Clinical Pathologists and that of the American Medical Association.

WORK SUPERVISED BY QUALIFIED PHYSICIANS

Section III. I will at all times work only under the direction and supervision of a pathologist or duly qualified doctor of medicine or specialist in one of the divisions of clinical pathology, such qualifications being determined on the basis of accepted medical ethics.

DIAGNOSIS

Section IV. I will make no diagnosis or interpretations other than those in the reports prepared by me.

THERAPY

Section V. I will not advise physicians or others how to treat disease.

OTHER EMPLOYMENT

Section VI. I will not accept work outside the practice of my employer.

INDEPENDENT LABORATORIES

Section VII. I will not engage in laboratory work independent of qualified supervision (as provided by Section III), nor will I operate an independent laboratory.

COMMISSION WORK

Section VIII. It is ethical to perform laboratory work on a commission basis under contract with a public health, research, or clinical laboratory when such work is done as provided in Section III above and when all contractual agreements are approved and signed by the director of the organization contracting for such services.

RESOLUTION PRESENTED TO THE BOARD OF REGISTRY OF MEDICAL TECHNOLOGISTS BY THE HOUSE OF DELEGATES OF THE AMERICAN SOCIETY OF MEDICAL TECHNOLOGISTS

Serious consideration was given by the Board of Registry to a resolution submitted to the Board of Registry by the House of Delegates of the American Society of Medical Technologists. (See July, 1947, A.J.M.T., Vol. 13, No. 4, p. 197.)

In consideration of the first item of the resolution it was pointed out that since the Board of Registry is actually a standing committee of the American Society of Clinical Pathologists, and since only members of the American Society of Clinical Pathologists can be members of such a committee, it would not be possible to grant this request. However, it was also pointed out that this request was made at a time when the Board of Registry had made provision for two members of the American Society of Medical Technologists to attend all meetings of the Board. It was the belief of the Board that this arrangement would be of the greatest benefit to all concerned.

The second part of the resolution was covered, in the opinion of the Board, by the results of the study made possible by the questionnaire. The opinions expressed in the answers to the questionnaire obviously made it impossible to accede to this request.

The third section of the resolution had been in the hands of the Committee on the Code of Ethics for almost a year, and it was the opinion of the Board that the deliberations of this committee had resulted in a new Code of Ethics which fulfilled this request as completely as possible.

TECHNICAL BULLETIN

With the approval of the Executive Committee of the American Society of Clinical Pathologists, the Board of Registry

increased the registrants' subscription price for the *Technical Bulletin* by twenty-five cents per year. The *Bulletin* has been expanded by fifty pages during the past year, and this together with the increasing editorial and publication costs, made this small increase necessary.

THE REGISTRY AND THE AMERICAN SOCIETY OF MEDICAL TECHNOLOGISTS

The Board of Registry recommended that the American Society of Medical Technologists be encouraged to circularize their state societies and urge them to incorporate in their separate states, in order to be in a better position to control the practice of medical technology in their states.

The Board suggested that the state societies use the Registry's lantern slides for some of their meetings, in order to show the work of the Registry in a more graphic manner. These slides show the salary studies made in the Registry office, statistics regarding distribution of registrants, training, and various other data obtained from periodic studies of registrants' records. The slides would be accompanied by explanatory textual material. Lantern slides showing the analysis of the answers to the recent questionnaire are also available to the various societies.

The Board voted to pay one-half of the expenses of the two members of the American Society of Medical Technologists who are selected by the Society to sit in on the Board meetings. The Board further moved that they go on record as being gratified and grateful for having the opportunity of meeting the Advisory Committee of Medical Technologists. Their advice and assistance in the Board's deliberations was of inestimable value.

Respectfully submitted,
LALL G. MONTGOMERY, M.D.,
Chairman, Board of Registry.

December 13, 1947.

BACK NUMBERS OF THE JOURNAL NEEDED

The following back numbers of the AMERICAN JOURNAL OF MEDICAL TECHNOLOGY are needed by the Executive Office of the A.S.M.T. Please notify Miss Hermine Tate, Medical Center Bldg., Lafayette, Louisiana, if you have copies which can be spared:

January 1935, March 1935, July 1935, September 1936, November 1936, May, 1937, January 1938, January 1939.

STATE AND LOCAL SOCIETIES

ARKANSAS

The Arkansas State Society of Medical Technologists met at the Hotel Sam Peck on November 15, 1947, with twenty-nine members present. Mrs. Violetta Wakefield presided. The welcoming address was made by Miss Wanda Brown, President of the Little Rock chapter. Mrs. Lucille Wallace, President of A.S.M.T., led a round table discussion on the relationship of the U. S. Civil Service Commission and the Department of Labor to the Registered Medical Technologist. Following a business meeting, the group had dinner in the Baroque Room. Dr. James Culbertson, head of the Department of Bacteriology and Parasitology, University of Arkansas School of Medicine, spoke on "Opportunities for Diagnostic Bacteriology in Arkansas."

Officers: President: Mrs. Rosemary Wright, Pine Bluff
 Vice-Pres.: Mrs Louise Sadler, Pine Bluff
 Secretary-Treas.: Miss Joyce Ponder, 1009 Park, Little Rock.

ILLINOIS

The Illinois Society of Clinical Laboratory Technicians and Chicago Society of Medical Technologists held their fall meeting in the Auditorium of St. Vincent's Infant and Maternity Hospital, Chicago, on November 7 and 8, 1947. At the scientific session, the following papers were presented: "Effects of Radiation Exposure on the Peripheral Blood," by Mrs. Edna Marks, MT (ASCP), Argonne Laboratories.

"Role of Fungi in Inhalent Allergy," by Reva Levin, MT (ASCP), with Dr. Leon Unger.

"Amoeba"—film through the courtesy of Eli Lilly & Co.

"Pediatrics and the Medical Technologist," by Dr. Howard Jacobs, Instructor, Pediatrics Division, Northwestern University Medical School.

"Laboratory Diagnosis of Virus Diseases," by Dr. Albert Milzer, Director, Bacteriology Department, Michael Reese Hospital.

"Rh Viewing Box Demonstration," by E. W. Erickson, American Hospital Supply Hospital Tour.

The Illinois Society of Clinical Laboratory Technicians unanimously voted to accept the Constitution and By-Laws in accordance with the A.S.M.T., and as of Nov. 8, 1947, officially changed its title to Illinois Medical Technologists Association. The Chicago District of the Medical Technologists Society was accepted as the first district to be formed in Illinois. The Springfield District was accepted as of Nov. 22, 1947. The theme of the Illinois Medical Technologists Association is 100 per cent membership of registered medical technologists from Illinois.

The next meeting will be in conjunction with the Tri-State Hospital Assembly, Palmer House, Chicago, May 2, 3, and 4, 1948.

Officers: President: Cecilia M. Kortteum, St. Vincent's Hospital, Chicago.
President-elect: Sr. M. Generosa, St. Francis Hospital, Peoria
Secretary: Helen Gurley, Mt. Sinai Hospital, Chicago
Treasurer: Marie McCoy, 2900 W. 69th St., Chicago

Committees:

Executive Board: Ellen Skirmont, 5493 S. Cornell Ave., Chicago

Dorothy Fink, Garfield Park Hospital, Chicago

Edna Murmann, 3934 N. Monticello Ave., Chicago

Membership: Marie McCoy, 2900 W. 69th St., Chicago

Educational: Sr. M. Loughlin, St. Bernard's Hospital, Chicago

Publications: Sr. M. Roselda, St. John's Hospital, Springfield

Nominating Committee for I. M. T. Association: Louise Vance, 105 S. York St., Elmhurst

Responsible for submitting slate for ASMT nominees: Eunice J. Reinhardt, St. John's Hospital, Springfield.

INDIANA

The Indianapolis Society of Medical Technologists will be affiliated with the Indiana Society. Both are planning seminars.

Indianapolis Society:

Officers: President: Mrs. Marjorie Joiner

Vice-Pres.: Helen Kottlowski

Sec.-Treasurer: Evelyn Heminger, 3610 Balsam Ave., Apt. No. 4, Indianapolis 5.

KANSAS

Organizational meeting held on Sunday, November 23, 1947, with the election of the following officers:

President: Mary Howard, St. Francis Hospital, Wichita

Vice-President: Sr. M. Florina, St. Francis Hospital, Wichita

Sec.-Treasurer: Mary Louise Kerschen, 148 S. Charles, Wichita

THE MARYLAND, DISTRICT OF COLUMBIA AND VIRGINIA

Societies of Medical Technologists held a joint seminar on November 25, 1947, in conjunction with the annual convention of the Southern Medical Association, at Baltimore.

MASSACHUSETTS

Massachusetts Society of Medical Technologists officers from September, 1947—June 30, 1948:

President: Elizabeth French.

Vice-President: Elfreda Klauke, 27 Forbes Street, Worcester

Secretary: Katherine Austin.

Treasurer: Mary Cassidy.

MINNESOTA

District No. 3 Central Minnesota District Society of Medical Technologists elected officers on September 7, 1947:

President: Mrs. A. C. Caylor, Litchfield
President-elect: Sr. M. Helen, OSF, Breckenridge
Vice-President: June Tyson, Brainerd
Secretary-Treas.: Sr. M. Michael, OSB., St. Cloud
Board of Directors: Sr. M. Constance, OSB, Brainerd
Sr. M. Emerita, OSF, Little Falls.

NEW HAMPSHIRE

The New Hampshire Society of Medical Technologists membership were guests of the Dartmouth Medical School, Hanover, N. H., at a seminar in Clinical Pathology, on Sept. 25 and 27, 1947. The scientific program was as follows:

"Hematology," Dr. R. E. Miller, with the use of the scopicon.
"Penicillin and Streptomycin Sensitivities," preparation of discs and planting cultures, by Miss Eleanor Hoag.

"Prothrombin Times," by Dr. Josiah Fuller, followed by demonstration and practice, led by Miss Hoag.

"Penicillin and Streptomycin Sensitivities," Professor K. N. Atkins, followed by discussion of cultures planted the previous day.

"Bone Marrow," by Dr. J. B. Holyoke, lecture and demonstration.

On Thursday evening the group had supper and a song-fest at the Lazy-J Ranch, with Mrs. Evelyn Jardine as hostess.

TEXAS

The Board of Directors of the Texas Society of Medical Technologists met in Waco, on November 23, 1947, with Miss Von-dell Stewart presiding. Among plans discussed were those for an intensive membership campaign as well as continued activity in organizing county and district societies throughout the state. Among those county societies whose revised Constitutions and By-Laws have been accepted are the Harris County, San Antonio (Bexar County), Travis County, and Galveston County. These have all applied for affiliation with the Texas society. Miss Estelle Boyd, 406 Lott St., Yoakum, is the Membership Chairman for the state organization.

Harris County Society of Medical Technologists:

Officers: President: Sr. M. Aniceta, St. Joseph's Infirmary, Houston
President-elect: Betty Anne Evans, Jefferson Davis Hospital, Houston
Secretary: Shige Nagai, M. D. Anderson Hospital, Houston
Treasurer: Mrs. Mildred Peel, St. Joseph's Infirmary, Houston

This society had as its guest speaker at the annual banquet on November 12, 1947, Mrs. Lucille Wallace, President of the A.S.M.T.

Travis County Society of Medical Technologists:

Officers: President: Elsie Urbanke, 1700 Palma Plaza, Austin

Vice-President: Billie Jo Colquitt

Secretary: Mrs. Willya Barkley

Treasurer: Mrs. Alice Conklin.

This organization had on November 10, 1947, as an honored guest speaker, Dr. Ruiz M. Castaneda, of Mexico City. His subject was "Brucellosis."

UTAH

The Utah Society of Medical Technologists held its organizational meeting on October 1, 1947, with twenty-five registered medical technologists of that state present at St. Benedict's Hospital, Ogden. The officers selected were:

President: Katherine Dean, St. Benedict's Hospital, Ogden

President-elect: Adrie E. Langan, St. Benedict's Hospital, Ogden

Secretary: Marguerite George, Holy Cross Hospital, Salt Lake City

Treasurer: Wimona Simonson, 1453 Vintah Circle, Salt Lake City

Board of Directors:

Sr. M. Benora Gaida, St. Benedict's Hospital, Ogden

Mary Pottner, Dept. of Biochemistry, Univ. of Utah, Salt Lake City

Mrs. LaVerle Kapaloski, Payson.

VIRGINIA

The Virginia Society of Medical Technologists held its organizational meeting in May, 1947, and was accepted as an affiliate with the A.S.M.T. at the annual convention in Denver. The Executive Board met in Roanoke, November 2, for the purpose of revising the Constitution and By-Laws to conform with that of the national organization. This board is composed of those officers elected at a special meeting held on October 11, in Richmond.

Officers: President: Harriet Howe, Route 13, Box 29, Richmond 21

Vice-Pres.: Eleanor Rawls, 800 Wainwright Bldg., Norfolk 10

Recording-Sec'y-Treasurer: Claire L. Halcher, 4004 Hermitage Road, Richmond

Cor. Secretary: Mrs. Frances Henry Crouch, 1405 Hillcrest Ave., Roanoke

Counsellor: Ida L. Reilly, Roanoke Hospital Ass'n, Roanoke

Board of Directors:

Mr. Edward Lavor, Norfolk

Joy Austin, 10 Oakhurst Circle, Charlottesville.

WEST VIRGINIA

The West Virginia Society of Medical Technologists held a conference on November 16, 1947, at the St. Francis Hospital, Charleston.

WISCONSIN

The annual convention of the Wisconsin Association of Medical Technologists was held on October 11 and 12, 1947, at the Plankinton Hotel and Columbia Hospital, Milwaukee.

Officers: President: Dorothy Zoeller, 711 N. 16th St., Milwaukee
President-elect: Grace Ballard, 925 N. 13th St., Milwaukee
Secretary: Margaret Foley, 2039 N. State St., Milwaukee
Treasurer: Mrs. Margaret Brei, 8435 Kenyon St., Wauwatosa
Historian: Opal Kelley, 2952 Frederick Ave., Milwaukee
Sergeant-at-Arms: Grace Jessel, 1171 Glenview Ave., Milwaukee

Officers of the Milwaukee District of W. A. M. T.:

President: Opal Kelley
President-elect: Charlotte Kovitz, 2439 N. Teutonia Ave., Milwaukee
Secretary: Mary Ellen Bielfeldt, 626 N. Jackson St., Milwaukee
Treasurer: Hedwig Koepke, 3735 N. 15th St., Milwaukee
Director: Margaret Foley, 2039 W. State St., Milwaukee





American Society
of
Medical Technologists

**ROSTER
SUPPLEMENT**

Name and address changes

Since January 1947

New Members

JANUARY, 1948

ALABAMA

Butler, Nellie M.
2219 Highland Avenue
Birmingham 5

Campbell, Betty G.
811 South 20th St.
Birmingham

Harris, Marjorie G.
1521 Walnut Hill Circle
Birmingham

Henley, Doris Alice
314 Clermont Drive
Birmingham

Lofton, Mrs. Gregg
(Hasselton)
1127 South 12th St.
Birmingham

Pitts, Doris P.
916 Keith Ave.
Anniston

Porter, Elizabeth S.
1806 Broad St.
Tuscaloosa

Skinner, Mary Louise
2851 Potter Drive
Mobile 18

Terry, Joseph E.
5000 Parkway
Fairfield

ARIZONA

Beckman, Helen H.
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Phoenix

Duff, Margaret
1901 N. Campbell Ave.
Tucson

Gavagan, Vivian H.
211 West Campbell
Phoenix

Hamblen, Frances A.
657 Fifth Ave.
Yuma

Harris, Bernice L.
Copper Queen Hospital
Bisbee

Keiper, Theodore W.
Pathological Laboratory
20 East Ochoa
Tucson

Kovarik, Rosemary
2206 North Ninth St.
Phoenix

Moore, Emily Frances
Indian Hospital
Phoenix

Nichols, Mrs. Joanne (Johnson)
Box 1002
Bisbee

Warren, Mary C.
2601 East Adams Street
Tucson

ARKANSAS

Clark, Mrs. Dorothy M.
914 Rush Drive
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Clarke, Virginia R.
c/o Dr. W. F. Clarke
Veterans' Hospital
North Little Rock

Hill, Nancy
947 County Avenue
Texarkana

Moyers, Mrs. Patricia Davis
Medical Arts Clinic
Jonesboro

Munn, Sara R.
803 West 15th St.
Little Rock

Peach, Marcella D.
3122 Wolfe St.
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Wilson, Helen B.
835 Quapaw Ave.
Hot Springs

Wishard, Mrs. Florida Cayce
Thornton

CALIFORNIA

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U. C. Laboratory
San Francisco City and
County Hospital
22nd and Potrero
San Francisco 10

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654 S. Madison
Pasadena 5

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Bakersfield

Bacon, Dorothy T.
2024 East Washington
Pasadena 7

Bardsley, Lorraine
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Bedsworth, Helen M.
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Gardena

Beneditz, Miriam B.
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1443 Santa Cruz
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COLORADO	
Bagley, Janice M.	125 East 18th Ave. Denver 5
Coomes, Sr. M. Cypriana	St. Francis Hospital and Sanitarium Colorado Springs
Dille, Mary	1731 Gilpin Denver
Gregory, Mary Louise	609 East Colfax Denver
Fields, Florence G. L.	Boulderado Hotel Boulder
Hamilton, Loretta I.	516 Republic Bldg. Denver
Hammerich, Kathleen Marie	1024 Cooper Ave. Glenwood Springs
Kepler, Jane Ryan	1062 S. Emerson St. Denver 9
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McNutt, Mary E.	R. R. No. 2, Box 50 B Greeley
Madigan, Jean F.	861 Acoma Denver
Miller, Mabel O.	4850 Morrison Road Denver 9
Muscavitch, Norma R.	c/o Great Western Sugar Co. Brush
Nelson, Sister Sigrid	215 West 5th Ave. Denver
Nicholas, Mrs. Marianna D.	Box 7098 Capitol Hill Station Denver
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Olson, Miriam Young	1800 Poplar St. Denver 7
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	Wolford, Mary G. 2707 Adams Mill Road, N.W. Washington 9

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Church, Ruth M. 1600 Maple St. Wilmington	Holt, Helen May Long Beach Via Sarasota
Rairigh, Helen T. 1405 B St. Elizabeth St. Wilmington 2	Hurrell, Mrs. Loretta 633 8th Street West St. Petersburg

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Schiffer, Beatrice
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